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UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF NEW YORK

BLUE CROSS AND BLUE SHIELD OF NEW JERSEY, et al.,

Plaintiff(s),

vs.

PHILIP MORRIS INCORPORATED, et al,

Defendant(s).

Case Number 98 Civ. 3287(JBW)

April 20, 2001

12:09 p.m.

Videotaped Deposition of JON A. KROSNICK, held at the offices of Arnold & Porter, 399 Park Avenue, New York, New York, before MayLeen Cintron, a Notary Public of the State of New York.

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A P P E A R A N C E S:

DEWEY BALLANTINE, LLP
Attorneys for Plaintiff Blue Cross and
Blue Shield of New Jersey
1301 Avenue of the Americas
New York, New York 10019-6092
BY: PAUL J. BSCHORR, ESQ.
JASON A. HARMAN, ESQ. (first session)
MICHAEL HEFTER, ESQ. (second session)

ARNOLD & PORTER
Attorneys for Defendant
Philip Morris, Inc.
555 Twelfth Street, N.W.
Washington, D.C. 20004-1206
BY: JOHN MASSARO, ESQ. (first session)
AMY L. McGINNIS, ESQ.

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A P P E A R A N C E S: (cont'd)

COLLIER SHANNON SCOTT
Attorneys for Defendant
RJ Reynolds Tobacco Company
3050 K Street, NW, Suite 400
Washington, DC 20007-5108
BY: WILLIAM M. BAILEY, ESQ.
JOHN B. WILLIAMS, ESQ. (second session)
KERRIE L. HOOK, ESQ. (second session)

ALSO PRESENT:

ROBERT FENILI

THOMAS DELVECCHIO, Videographer

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IT IS HEREBY STIPULATED AND AGREED by and between the attorneys for the respective parties herein, that the filing, sealing and certification of the within deposition be waived.

IT IS FURTHER STIPULATED AND AGREED that all objections, except as to the form of the question, shall be reserved to the time of the trial.

IT IS FURTHER STIPULATED AND AGREED that the within deposition may be sworn to and signed before any officer authorized to administer an oath with the same force and effect as if signed and sworn to before the Court.

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THE VIDEOGRAPHER: This is tape number one of the videotaped deposition of Jon A. Krosnick taken by Defendants in the matter of Blue Cross and Blue Shield of New Jersey, et al., Plaintiff, versus Philip Morris, Incorporated, et al. Defendant, in the United States District Court, Eastern District of New York, number CV-98-3287 (JCW). This deposition is being held at Arnold & Porter, 399 Park Avenue, New York, New York on April 20, 2001.

The time is 12:09 p.m. My name is Thomas Delvecchio from the firm of Spherion Court Reporting, I am the legal video specialist. The court reporter is Maybeen Cintron in association with Spherion Court Reporting at 545 Fifth Avenue, New York, New York.

For the record, will counsel please introduce themselves?

MR. BSCHORR: Paul Bschorr of Dewey Ballantine on behalf of Blue Cross and Blue Shield.

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MR. HARMAN: Jason Harman also with Dewey Ballantine.

MR. MASSARO: John Massaro of Arnold & Porter on behalf of Philip Morris, Incorporated.

MS. McGINNIS: Amy McGinnis also with Arnold & Porter on behalf of Philip Morris.

MR. BAILEY: William Bailey of Collier Shannon Scott on behalf of RJ Reynolds Tobacco Company, and with me is Robert Fenili.

THE VIDEOGRAPHER: Will the court reporter please swear in the witness?

J O N A. K R O S N I C K, called as a witness, having been duly sworn by a Notary Public, was examined and testified as follows:

THE REPORTER: Please state your full name for the record.

THE WITNESS: Jon A. Krosnick.

EXAMINATION BY

MR. MASSARO:

Q. Okay. Dr. Krosnick, welcome. As

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you heard and as we mentioned before, my name is John Massaro and I'm representing Defendant Philip Morris in this action.

This is your third deposition in this case; is that correct?

A. Yes, it is.

(Krosnick Exhibit 1, Supplemental Disclosure Report, marked for identification, as of this date.)

Q. And we've placed in front of you now Exhibit 1. Can you identify that, please?

A. Yes. This is a Supplemental Disclosure Report that I believe was submitted to you all recently representing additional information on my analysis.

Q. Have you before you -- I assume you drafted the supplemental disclosure?

A. Yes, I did.

Q. Before you drafted it, did you have a chance to review your prior testimony in the case, in the two previous depositions?

A. I had certainly reviewed all of that some time prior to when I started working on this, yes.

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Q. Some time prior to when you started working on Exhibit 1?

A. Yes.

Q. So you reviewed your deposition testimony from March 12th, the second deposition in this case?

A. I've read most of it since then, yes. I haven't completely read it.

Q. Do you have any additions or changes to that testimony that you need to make?

A. Not that I'm aware of.

Q. And do you have at this time any changes to the first day of deposition from back in February that you need to make?

A. Not that I'm aware of.

Q. Why don't you just tell us why it is that you went ahead and did a third report in this case?

A. Okay. Well, in social science research in the academic world that I live in, the publication process involves a sequence of what we call peer review whereby an author writes a piece of research up and submits it

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to a journal, and the journal then solicits evaluation from peers who are experts in the area who typically will raise questions or uncertainties about the work.

And those uncertainties or questions are then returned to the author and the author -- it is incumbent on the author then to respond to those issues by revisiting the data that were examined to test whether these hypothesis or correct or plausible in some way, revise the paper and resubmit it to the journal.

In this case, it seemed to me that the process actually evolved somewhat like that. That I did a piece of research, submitted a written report, and then received back a series of written critique of that work by experts commissioned by the Defendants, as I understand it.

And in those reports, they raised a series of issues. In addition, during my depositions, a series of issues were raised about the data, and in some cases, I was in a position where I could return to the data and

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test whether these suppositions were actually defensible, credible, plausible or not.

And so I thought it would be helpful to conduct those analyses, which I did. And when I did, the attorneys representing Empire said that I needed to describe what I found in a written report and present it to you all, which I did.

Q. Okay. So you view the expert reports of some of the Defendants' experts as something akin to a peer review of your prior work in this case?

A. There are aspects of that process that resemble a typical peer review, yes.

Q. And you view some of the questions that were asked at your deposition as something akin to a peer review of your work in the case?

A. Procedurally, we don't always have conversations face-to-face with editors or reviewers. But in those depositions, questions were raised about the meaning of the data that I had presented. And that process identifying such issues is analogous to what

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occurs partly during a peer review process.

Q. And this report, then, Exhibit 1, sets forth your response to the review by Defendants' experts of your work?

A. No.

Q. Does this response set forth -- are you saying no because it doesn't set forth all of your responses to the review?

A. I didn't think of this, really, as responding particularly. I thought of this as being helpful to the process by returning to the data and testing some of these assertions that were testable.

I didn't view this as a process whereby I should consider and respond to all of the issues that were raised, particularly issues that need not be addressed by data analysis. This is completely focused on revisiting the data themselves to the extent they could be helpful.

Q. But you revisited the data in order to respond to criticisms that had been made of your prior work by the Defendants?

A. In order to respond to criticisms

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or questions or uncertainties that were raised, yes.

Q. And this Exhibit 1 is, then, the result of your revisiting of that data in order to respond to the Defendants' criticism?

A. I'm hesitating on the word "respond" because I didn't really view it as responding in that sense.

I revisited the data in order to address my own interest in these issues. And having done those analyses, the attorneys said that it was my responsibility in this process to share what I came up with with you all.

But I did not view this as a situation in which, you know, some concerns had been raised and, therefore, I would respond as I would with a journal editor, for example.

Because in that case, I would detail every issue that's raised and I would address every issue that's raised both by drawing on additional data analyses and any other literature and any other thinking that I might have.

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But this is not that type of process, as far as I understand.

Q. Okay. But you are addressing then, not to use the word "respond," but you are addressing some of the issues that were raised by Defendants' expert in this new report which is Exhibit 1; is that correct?

A. Absolutely right.

Q. Have you -- and you did additional analyses of some of the data that you already had in order to address some of those remarks by Defendants' experts; is that fair?

A. Not only Defendants' experts, but as I earlier said, during questioning and deposition as well.

Q. Okay. As I gather your description of the process, it sounds like it was your idea to do this; is that fair?

A. Do what?

Q. To create, to go back and address some of these concerns that were raised by Defendants' experts?

A. Yes, it was.

Q. Are you the only person who

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contributed work product to this report?

A. Yes, I am.

Q. And you conducted then the actual -- for example, you run some logistic regressions, the results of those are reflected in Exhibit 1, correct?

A. Yes.

Q. And you're the one who ran those regressions?

A. That's right.

Q. And I assume, do you hold all the views expressed in Exhibit 1 to a reasonable degree of scientific certainty?

A. Yes, I do.

Q. Are there other issues that were raised in Defendants' expert reports that have prompted you to go back and reanalyze your data? Let me just leave the question there.

A. I would have to look at those reports again to see what issues were raised.

And you know, I can't recall specifically an answer to that question with specificity.

Q. Okay. Have you done any other

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reanalysis of your data since your deposition on March 12th, other than the analysis reflected in Exhibit 1?

A. I believe -- you know, I'm not completely sure. Anything that I did was turned over to you appended to this report at the time. There may have been some additional analyses that I did. I just don't remember what was in the package.

Q. Let me give you an example. Dr. Wecker, have you read his report?

A. Which of his reports?

Q. The report of his that comments upon your reports.

A. I've read one of his reports which I gather was very recent, and may have been -- now that you said this, perhaps it was focused on mine, yes.

Q. And it comments upon your calculation of the relative risk that you performed in your initial report? Do you remember Dr. Wecker doing that?

A. What I remember in his report was an analysis, a statistical analysis using not

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the data that I analyzed here, but some other data addressing what his perception of the actual relative risk of contracting lung cancer from cigarette smoking is.

I didn't personally do any analysis to address that question. And that's why I got a little thrown off by your question.

Q. Okay. And have you done any analysis or investigation since March 12th or since receiving that report from Dr. Wecker to respond to Dr. Wecker's report?

MR. BSCHORR: Objection.

A. No.

Q. Some of the Defendants' experts reports make remark about the position of your prior report that dealt with the deposition survey of Blue Cross subscribers. Do you recall that issue?

A. Yes.

Q. Have you done any reanalysis of your previous analysis with respect to the deposition survey in response to comments made by Defendants' experts?

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A. No. I have continued to read those depositions. And as I continue to read them, I get more information about them. But I have not redone in any way the earlier analysis, no.

Q. Okay. You haven't done any modifications to your prior statistical analyses of those depositions?

A. That's correct.

Q. And just so the record is clear, any analysis, reanalysis that you did of the SRBI data has been provided to the Defendants, at least so far as you know?

A. Yes. I don't know what was turned over to you, so I can't comment.

MR. BSCHORR: As far as I know, I'll represent that everything that he turned over to us, we turned over to you.

MR. MASSARO: That closes the loop. Thank you.

Q. Do you view your SRBI survey as having been peer reviewed at this point?

A. I think it has undergone a process

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very much like a peer review, yes.

Q. In what way is it different from a peer review?

A. Well, I guess we can talk about different sorts of peer review that occur in social science. But let's take the most common one.

In the most common one that involves journal article, publications or grant reviews, the reviewers are anonymous from the point of view of the reviewed, sort to speak.

So I would not normally know the identities of the people who are evaluating my work.

Q. Okay. Any other differences?

A. Secondly, there would not be the case that anyone involved in the process would have been under oath in providing the information that they provided, and I don't know the extent to which the legal process considers us under oath as we do this. But that would be another difference.

Yet another difference would be

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that the peer review process is typically implemented by an editor or a grant review administrator who selects the reviewers and brings about the process.

And in this case, one might consider the lawyers involved to represent the editor.

Other than those differences, I would say this process very much resembled a typical peer review.

Q. At this time, do you have plans to do any further reanalysis of the SRBI data prior to your testimony on Monday?

A. No, I don't.

Q. And do you have plans to do any further reanalysis of the deposition survey data prior to your testimony on Monday?

A. No, I don't.

Q. No plan for any additional supplemental disclosure prior to Monday?

A. No.

Q. Very good.

I'd just like to take a look at Exhibit 1. And I guess beginning at the back,

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the last section, "Wording of Survey Questions Used to Measure Perception of Risk," which begins on page 5.

A. Yes.

Q. In that section you discuss having conducted logistic regressions predicting quitting with a perceived risk differential?

A. Yes.

Q. Those, you had not done those regressions in your prior reports; is that correct?

A. I had not described them in prior reports, that is correct.

Q. Had you done the logistic regressions prior to the prior report?

A. Prior to submitting the prior report?

Q. Yes.

A. No.

Q. They were done since your last deposition; is that fair?

A. That is correct.

Q. The next, moving further forward in the document, the "Relative Risk versus the

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Absolute Risk and the Risk Differential" on page 4 refers to testing whether perceptions of relative risk, perceptions, smoker's absolute risk or the risk differential inspire quitting smoking. That test is a test you've done since your last deposition in this case, correct?

A. That's correct.

Q. And then there's a reference to the linear trend analysis in Paragraph 11. That, again, is an analysis you've done since your last deposition in this case?

A. That's correct.

Q. And then there's two logistic regressions that are referred to in Paragraph 12. And those are analyses that were conducted since the last deposition in the case, correct?

A. That's correct.

Q. The same, is it also true for the recoding of the constituents in the motivation to quit index, that is a recoding that has been done since the last deposition in this case, correct?

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A. Yes, it is.

Q. And a discussion of Cronbach's alpha in Paragraph 7 on page 3, that analysis relating to Cronbach's alpha is something that's been done since the last deposition in this case, correct?

A. No.

Q. Okay. That was done before the last deposition in this case?

A. I believe it was done before the first report that I submitted was submitted.

Q. Okay.

A. And it was included in the packet of materials turned over accompanying that report at that time.

Q. But there is no discussion of the Cronbach's alpha results in the text of your first report served in January of this year?

A. That's correct.

Q. And was there discussion -- there is no discussion of that in the prior two depositions in this case; is that fair?

A. There was discussion of the issue that it addresses in the prior depositions.

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Q. No discussion of the analysis that resulted in the statistic of .78 for current smokers?

A. I don't remember for sure.

Q. And then Paragraph 6 refers to a test that you ran in response to Defendants' expert Mathiowetz' report. That's a test that you have done since the last deposition in this case, correct?

A. In a way that's correct, in a way it's not correct. The essence of this test is reported in my first report. It's done here slightly differently.

Q. Okay. So the test and the test results that we have in this report are different from the test results that you had performed prior to the last deposition?

A. Well, no. The results are the same.

Q. The test is performed in a different way than it had been done previously; is that correct?

A. That's correct.

Q. Is the same thing true for the

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test referred to in Paragraph 4 and 5 of the report; they're done a different way than they had been done previously?

A. That's correct.

Q. And what's your, what about the analysis discussed in Paragraph 2 of the report? Is that something that's new since your first deposition in this case?

A. Again, the hypothesis being tested there was tested in my first report. It's being tested here in a slightly different way and the result is the same.

Q. In your first report, you didn't run the analysis controlling further variables that are reflected in Paragraph 2, did you?

A. That's correct.

Q. But you believe you addressed that issue in some other way in the first report; is that what you're saying?

A. That's correct.

Q. Now that we're back at Paragraphs 2 and 3, let me ask you if you can briefly describe for the record what it is you did, the analyses that you did that's

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reflected in Paragraphs 2 and 3.

A. Okay. Well, the focus of this analysis is revisiting the question of what impact, if any, the quotes by the Surgeon General and employees of tobacco companies that were read to the SRBI respondents had on what I have called in the report the motivation to quit index. That is, the extent to which current and former smokers regret smoking.

And in analyzing any true experiment where respondents are randomly assigned to different experimental conditions, as they were here, it's important to control for differences that may occur by chance alone between the groups in terms of characteristics of the individuals not affected by the experimental manipulation of interest.

In my first report, I did that controlling by relying on the random assignment procedure. That is random assignment in principal should yield groups that are very similar. And in fact, the groups were very similar as I described in my

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report.

What this analysis does is to take a small additional step to control for these demographic differences between the four groups by incorporating measures of all the available demographics as control variables in an analysis based on the same mathematics as were used in the first report that I submitted.

Q. Okay. Are there additional variables that you could have controlled for based on the data that you have?

A. I did not feel that there were any other variables that could legitimately be used in that control. I believe it is defensible to control for variables that cannot be affected by a manipulation itself. And so I focused on demographic variables only.

Q. Okay. Let me just see, make sure that I have it.

There are additional variables that you could have controlled for, correct?

A. Well, there are other variables

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measured in the survey. And when you say that I could have controlled for, I could have gone through the mechanical process of putting one of those variables in as a control variable when doing the statistic. So you know kind of physically I could have done it, yes.

Q. But you didn't feel it was appropriate to control for any additional variables other than the ones that are reflected in Paragraph 2?

A. That's correct.

Q. Did you consider controlling for additional variables other than the ones reflected in Paragraph 2?

A. No.

Q. The results of this is reflected in Table 1, the first two columns in Table 1 which is in Exhibit 1, correct?

A. The results described in Paragraph 2 are in the first two columns, yes.

Q. And the variables are, some of them are listed, they're all listed, I guess, in the furthest left-hand column of Table 1?

A. Yes, they are.

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Q. What does it mean if a variable's coefficient is significant?

A. That means that the variable listed there can be used to predict values of the dependent variable, in this case the motivation to quit index, yielding greater than chance accuracy in that prediction process while holding constant all of the other predictors included in the equation.

Q. So does it say, then, that that variable is in part a determinant of someone's motivation to quit as measured by the motivation to quit index?

A. That's true for some of these variables. The three at the top of the list that are the focus of this analysis are suitably described in the terms you used because they are experimentally manipulated.

So the extent there is a relationship between these variables and the dependent variable, it can only be because the manipulation affected the dependent variable.

Q. And does the size of the coefficient, what impact -- strike that.

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What importance, if any, does the size of the coefficient have when we're discussing these first three variables on the list?

A. Well, the size of the coefficient with regard to those three variables describes the size of the difference between the experimental groups being compared in terms of the dependent variable. That is the motivation to quit index.

Q. Is it the case that the greater the coefficient, the greater the effect of that variable on motivation to quit?

A. Yes.

Q. And the sign, whether it is negative or positive of the variable, what import does that have in your opinion?

A. Well, the sign, in the case of those three predictors, reveals the direction in which the prediction is justified.

In other words, the first two coefficients listed at the top of the first column in Table 1 are both positive. And the predictor variables are coded such that a

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larger number there refers to presence in the control or SG conditions of the experiment as compared to the SGTB group. And the dependent variable is coded such that larger values mean less motivation to quit.

So what that means is that in the SGTB group, there is more motivation to quit and regret about smoking than there is in the control or the SG group.

Q. Okay. And if something leads to there being more -- strike that.

If a variable leads to there being more motivation to quit, in your opinion, that means that fewer people would have smoked had those conditions been present?

A. That's correct.

Q. So that if a variable's sign is positive in this analysis, it means that it would have the effect of causing more people to quit smoking?

A. I think we need to be clear on what "it" is in your sentence.

Q. If a variable sign was positive, that would mean that the presence of the

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conditions reflected by that variable would lead to more people quitting smoking in the real world, in your opinion?

A. I'm tempted to say yes. But I'm concerned that may lead to misunderstanding so let me be absolutely clear.

Given the way these variables are coded, these positive coefficient mean that the respondents who are in the SGTB group expressed more regret about smoking and more desire not to smoke than the respondents in the SG group and the respondents in the control group, significantly so.

And from those differences, I infer a greater motivation not to smoke and, therefore, a reduced likelihood of smoking in the future.

Q. And the last portion of your answer, from those differences what you infer, refers to the real world?

A. Yes.

Q. From those differences you infer that more people would have quit in the real world; is that fair?

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A. That's correct.

Q. And that's because the coefficient is greater for those and is significant for those variables as compared to other variables that you run?

A. No.

Q. If the coefficient -- strike that. Let's look at the first two variables, condition four versus one and condition four versus two?

A. Okay.

Q. Condition four is SGTB?

A. Yes.

Q. And condition one is the control group?

A. Yes.

Q. And two is SG, correct?

A. Yes.

Q. Can you say that the fact that the first comparison has a coefficient .21 versus the fact that the second has a coefficient of .19 means anything about those two variables as compared to one another?

MR. BSCHORR: "Mean anything"?

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A. I'm sorry. It is a little too vaguely stated. If you want to be more specific, I'll be happy to be a little more clearer.

Q. Does the size of the coefficient have an impact at all on your conclusion about the effect of that variable on people's motivation to quit?

A. Yes.

Q. And what effect does it have?

A. Well, as I described earlier, the sizes of these coefficients describe the magnitudes of differences between the experimental conditions in average motivation to quit controlling for the remaining variable.

Q. And the greater the difference, the greater the motivation to quit?

A. I wouldn't say that. I mean, the greater the difference, the greater the difference in motivation to quit.

Q. The greater the effect on motivation to quit?

A. The greater the effect of the

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manipulation, yes.

Q. In Paragraph 3, the conclusion you reached is that hearing messages simultaneously from two difference sources would have an effect on motivation to quit; is that fair?

A. Yes. Not two different sources but two particular sources.

Q. That's what I was getting at actually. There is, it is important to you that it is these two particular sources, the Surgeon General and the tobacco companies, correct?

A. I'm not sure what you mean by "important" to me.

Q. The way your opinion is phrased, you indicate that people find it especially persuasive to hear these messages from two different sources, especially when making the statements was against material interest of one of the sources; do you see that?

A. Yes, I do.

Q. Does that indicate to you or due -- strike that.

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Krosnick

Is it your conclusion that whenever people hear these sorts of remarks from two different sources, that has an effect on their motivation to quit that's greater than if they heard it from just one source?

A. No.

Q. And do you have an opinion as to whether there are other sources -- strike that.

Do you have an opinion about sources other than the Surgeon General and the tobacco groups and whether their statements would have an effect on motivation to quit?

A. Yes, I do.

Q. Okay. What is that?

A. Well, by analogy, this experiment was designed to represent a process that could have unfolded in the role world, but it did not.

And because of the nature of experimentation, it is never possible to incorporate in a, all of the relevant real world circumstances that could be present at the time of interest.

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Krosnick

So in designing this study, I viewed messages from the Surgeon General of the United States as being suitable proxies and particularly desirable proxies from messages from other credible health professionals whose interest is in protecting public health and minimizing the likelihood of disease in America.

Similarly, the particular tobacco companies that were mentioned in the manipulations used in this experiment were viewed as proxies for other tobacco companies that could instead have been used.

And so by analogy, I am comfortable generalizing these results to other information sources besides these particular tobacco companies and the Surgeon General in particular, yes.

Q. Okay. Do you view the Surgeon General and the American Heart Association as different sources?

A. Yes.

Q. Do you view the Surgeon General and the American Lung Association as different

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sources?

A. Yes.

Q. And do you view the various tobacco companies as each different sources from one another; is that what you're saying?

A. Yes, I do.

Q. And do you have an opinion about whether hearing messages from two tobacco companies as opposed to from one tobacco company could have an effect on motivation to quit?

A. I think we'd have to be specific about what messages. But I think, yes, it is possible for two messages from two different tobacco companies to have a different impact than only one of those messages alone.

Q. And do you have an opinion about whether that is a greater or lesser impact?

A. Yes. The literature in social psychology would suggest that it would be a greater impact in general, assuming the messages make the same assertion. And assuming that the assertion is viewed as credible by the audience.

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On the other hand, if the assertion is viewed as not credible, then more and more assertions may not, in fact, increase persuasion.

Q. And is the same thing true in the flip side? You said the Surgeon General and you meant the American Heart Association as different sources, correct?

A. Yes.

Q. Do you have an opinion about whether hearing a statement from the Surgeon General and the American Heart Association as opposed to just hearing it from the Surgeon General would have an effect on motivation to quit?

A. As I said, yes. I think it could have an effect, yes.

Q. Okay. And what would the effect be?

A. Let me clarify. Are you asking an effect different from if only one source were --

Q. Correct.

A. Okay. I just wanted to make

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sure.

It is possible that hearing quotes from a second source, if viewed as credible can increase persuasion, yes.

Q. And when you say it's possible, do you have an expert opinion as to whether that's the case or not?

A. That is my expert opinion.

Q. Let's look at Table 1 again. More for my use than yours, I suspect.

The analysis that you're referring to in Paragraphs 1 and 2, you ran on the SGTB group versus each of the other three groups; is that correct?

A. Yes. I think that's a fair way to put it.

Q. And you ran it -- okay.

And did you run it on any other groups?

A. Sorry. The phrasing of the question is catching me up here.

Q. Did you compare any other groups in your analysis that's described in Paragraphs 1 and 2 -- 2 and 3?

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A. Well, in Paragraphs 2 and 3, my analysis focuses on comparing the SGTB group to each of the other three groups, and only those other three groups.

Q. So you didn't run it on SG versus TB?

A. Not in those columns of numbers, no.

Q. Did you run it on SGTB in any other columns? Strike that.

Did you run it on SG versus TB on any other columns?

A. No.

Q. And those columns you didn't run it are controlled versus TB, correct?

A. In which columns?

Q. In the first three.

A. The first three columns, no, there is no comparison between control and TB, that's correct.

Q. But later on you did run a comparison between control and TB, correct?

A. Oh, I'm sorry. My mistake.

When you're saying the first

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three, you mean the first three columns of number?

Q. The first three rows is probably a better way to describe it.

MR. BSCHORR: First three rows.

A. Excuse me. Let's start this again. In the first three rows, there is only comparison of the SGTB group to each of the other three groups and there is no other comparison to any of the other groups anywhere.

Q. And nowhere in Table 1 is there a comparison of SG versus TB; is that correct?

A. Correct.

Q. But there is a comparison later on of control versus TB, correct?

A. Yes, it is.

Q. And that's not significant?

A. That's correct.

Q. And all of these analyses -- strike that.

In any of these analyses, did you run them using only data for current smokers?

A. No.

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Q. Let's look at Paragraph 5 of the opinion of Exhibit 1.

A. Okay.

Q. In Paragraphs 4 and 5, you're essentially testing the hypothesis that hearing a greater number of statements is what drives the motion to quit differences rather than the source; is that a fair summary?

A. No.

Q. Okay. Why don't you give me a fair summary?

A. I am testing simply whether volume of quotes affects motivation to quit.

Q. Are you testing whether there is any effect at all from volume of quotes or from whether, instead, volume of quotes is the only affect?

A. I'm testing whether volume has any effect.

Q. And do you have a conclusion about whether volume has any effect?

A. Yes, I do.

Q. What is that conclusion?

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A. That it does not in and of itself.

Q. So merely hearing the same source make a statement over and over again, in your opinion, has no effect on motivation to quit?

A. In this experiment, hearing three quotes did not increase motivation to quit as compared to people who heard no quotes. That's my conclusion.

Q. And what -- do you draw any conclusion about, you just stated the results of your experiment.

Do the results of your experiment lead you to draw any conclusions about the real world in that respect?

A. No.

Q. So do you have an opinion then about whether hearing the same statement from the same source different number of times would have an effect on a person's smoking pattern?

A. Yes.

Q. What is that opinion?

A. Well, there is large literature on what's called message repetition in

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psychology, when the message comes from the same source over and over again.

And repeated exposure to a message has been shown to enhance persuasion -- excuse me, to enhance persuasion up to a certain point, and then after, you might say too many exposures, it actually decreases persuasion as a general rule.

However, that general pattern is conditioned by an interaction determined by a host of variables. The extent to which the message is processed carefully and the strength of the arguments in the message are two of the determinants of the nature of that process.

So in other words, it is possible that repeated exposure to the same message can initially increase persuasion, or it can initially decrease persuasion.

So my goal in doing this comparison here was to say very narrowly with regard to these particular sources and these particular messages, exposed under these particular circumstances, does merely hearing

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these quotes in a certain volume enhance motivation to quit as compared to people who have not heard those quotes.

And therefore, the conclusion I draw is that in this context, mere volume does not produce differences in motivation to quit, thereby reducing the likelihood that any other differences are attributable to mere volume.

Q. The answer you just gave began with a description of what the literature shows about exposure to the same message from the same source over and over again, correct?

A. Yes.

Q. And that opinion then was based on your general background familiarity with the literature as a whole?

A. That's correct.

Q. It was not based on this experiment that you've run in this case?

A. That's correct.

Q. Do you have any opinion in this case based on the experiment that you've run in this case about that question?

A. Sorry. You have to repeat the

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question.

Q. Which is whether hearing the same statement over and over again from the same source would have an impact on people's motivation to quit?

A. Again, I'm having trouble with the question. As compared to what? I guess? Would it have impact? I guess I'm not clear.

Q. Do you have an opinion based on the experiment that you've run in this case, as to whether a person's motivation to quit increases in proportion to the number of times that they here a statement from the same source?

A. Yes, I have an opinion.

Q. And what is that opinion?

A. It is that it depends on the message and it depends on the source and it depends on the circumstance.

Q. Let's assume that the message and the source are the same and the only question, the only thing that differs is the number of times that the source makes the statement.

Do you have an opinion about

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whether that has an effect on someone's motivation to quit?

A. Yes. As I just said, it depends on what the source is and what the message is. So just saying they're held constant, I understood that. But I'm saying it depends on who exactly the source is and what exactly the message is and what exactly the context is.

Q. Okay. So you have different opinions about that question based on your experiment in this case depending on who the source is?

A. I'm sorry. Maybe I lost the question. But I was answering generally not about this experiment. I was answering about the real world. I thought that's what you asked.

Q. I'm asking: Do you have an opinion in this case based on this experiment that you've run in this case, about whether hearing the same statement from the same source over and over again increases a person's motivation to quit?

A. Yes. I have an opinion and the

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opinion is that it depends upon what else is going on at the time and who the sources are and what they're saying, as I've said.

Q. So if it depends in part at least on who the sources are --

A. Yes.

Q. -- two different sources involved in your experiment are the Surgeon General and the tobacco companies, correct?

A. Yes.

Q. And do you believe then that repetitious statements from the Surgeon General have a different effect on motivation to quit than repetitious statements from the tobacco companies?

A. Repetitious statements? You mean repeating the same statement? Just to be clear.

Q. Yes.

A. You don't mean that perjoratively?

Q. No, not at all.

A. Okay. Okay. Let me see if I can regroup and clarify what I -- to be helpful here.

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The purpose of the comparison of the control condition to the SG condition and the TB condition were to assess whether under these circumstances, presenting these particular quotes together all three in a row from either of those two sources, in and of itself, heightens the salience of this issue for people and heightens the salience of assertions from health risks from smoking at the time that the respondents are answering subsequent questions.

Q. Correct.

A. That's an assertion that was made by defense expert Mathiowetz.

So the purpose of this comparison is to address that issue. In this context, hearing three quotes from one source when those three quotes were very highly publicized previously, did not significantly alter motivation to quit.

I draw no more general conclusions from that other than in this context, that presentation of information did not alter motivation to quit. And the only conclusion

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in this context that I draw that's of value from that finding is that the differences observed between the control group and the SG group on the one hand and the SGTB group on the other hand are not due simply to the increase in volume of quotes represented by the sixth set -- excuse me, the set of six presented to the SGTB respondents.

Q. And I believe I may understand what your position is, Mr. Krosnick, but let me ask.

A. Great. Okay.

Q. Do you draw any conclusion at all about whether hearing seven statements from the Surgeon General would lead to greater motivation to quit than hearing three statements from the Surgeon General?

A. It depends on what the statements are, what the context is in which they're heard and so on, as I've said earlier.

Q. So you believe you can draw no general conclusion about that without knowing more specifics about the context?

A. Right. From this result, yes.

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That's what you're asking about?

Q. Yes.

A. Great.

Q. All of this is in the context from the result that's discussed in Paragraph 4 and five of this report.

A. Great. Okay.

Q. And is the same thing true for tobacco company statements. That you have no, you draw no conclusion from the analysis that you've run that's reflected in this report about whether hearing seven statements from tobacco companies would have had a greater effect or motivation to quit than hearing three statements from tobacco companies?

A. I cannot draw any conclusion about that from these data, yes, that's correct.

Let me just add one footnote just to make sure that we're not misunderstanding something here. All of this discussion that we've had so far focuses on repeated exposure for a single recipient. Okay? I just want to make that clear.

Q. Meaning a single smoker?

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A. Yes.

Q. And the conclusion that you do draw is that merely hearing a greater number of -- strike that.

The conclusion that you do draw is that merely hearing three statements as opposed to zero does not have an effect on motivation to quit?

A. The conclusion that I draw is that in this experiment, hearing three statements from a single source did not alter motivation to quit.

Q. And that's controlling for all other potential differences between the situation, is that correct? Let me rephrase that.

A. Okay.

Q. All you're testing for is whether an increased number of statements from that source has an effect on motivation to quit?

A. Not exactly an increased number. I'm simply testing whether any -- these tests are assessing whether hearing three quotes as compared to zero leads to an increase in

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motivation to quit.

Q. So let's look after Paragraph 5 previously. The fact that there is nonsignificant differences between the control group and the SG group tells you that there are no effects on motivation to quit from the different exposures of those two groups?

A. I would almost phrase it that way. I would say that there is no effect of hearing the three quotes on motivation to quit.

Q. So that when there's a nonsignificant difference between the groups, your conclusion is that hearing the different statements reflected in those two groups does not have an effect on motivation to quit?

A. You're right. Let me be clear. Technically speaking when we do statistical significance tests, we are testing whether we can reject what's called the null hypothesis. The null hypothesis in this case would say hearing three quotes produces no change on average in motivation to quit.

In doing the test I'm saying, with

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what confidence can I reject that hypothesis?

And the results that come out of these tests indicate that I cannot have enough confidence based on conventional standards in the profession to reject. Therefore, I conclude I cannot -- because I cannot conclude that it did have an impact, I'm forced to conclude it did not have an impact.

Q. So whenever there are nonsignificant differences between two groups, you're in the position of not being able to opine that there is an increased motivation to quit between those two groups?

A. That's correct.

Q. And can you affirmatively opine that there is no increased motivation to quit between those two groups?

A. In this experiment, yes.

Q. And that's true whenever there is a nonsignificant difference between the two groups?

A. Whenever there is a nonsignificant difference in a context in which you have confidence that your significance testing is

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effectively done.

Q. Okay. And the comparisons that you've drawn in this experiment are all comparisons in which you have confidence that that's been done properly; is that fair?

A. That's correct.

Q. The analysis that's reflected in Paragraphs 4 and 5. Again, you did not run that analysis on only people who were smokers; is that fair?

A. That is correct.

Q. Can you describe for me then what -- let's move on to Paragraph 6.

This is a test that you ran in response to an issue raised by Professor Mathiowetz, correct?

A. Yes.

Q. And what's the result of the test?

A. I tested whether the effects of the manipulation were significantly different among current smokers than they were among former smokers. And I found that they were not.

Q. Okay. But you didn't run the

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test -- you didn't do that in the following manner, you did not run the test for current smokers and then run it for former smokers and compare the two results; is that fair?

A. Well, this analysis essentially does that. I mean, it is essentially comparing the two groups.

It is a more powerful version of I think what you may be implying, where you simply run one regression with half of the data and another regression with another half of the data.

This analysis essentially is comparing those two groups directly in a simultaneous analysis.

Q. This analysis runs a regression on all of the data, current smokers and former smokers, combined, correct?

A. Correct.

Q. And then you make some comparisons based on -- between former smokers and current smokers based on having run the regression on all of the people together, correct?

A. Well, I don't make the

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comparisons. The statistical model makes the comparison.

Q. Fair enough.

A. Whereas --

Q. Is that the only modification you have? In other words, you agree other than it is the model that makes the statistical comparison?

A. Yes. I think the model you are alluding to is the one where I actually have to make the comparison. Whereas in this analysis, the statistical program does it as a part of the exercise.

Q. You could have run the regression on only current smokers and run the regression on only former smokers and then compared the two, correct?

A. Yes.

Q. But instead you ran it this way where current smokers and former smokers are together in the regression?

A. That's correct. Because that's the more powerful, more proper, very much standard practice approach in our literature.

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Q. You described what the test was. What was the result of the test that's described in Paragraph 6?

A. As I said a moment ago, I did not find any significant differences in the effects of the manipulations between current and former smokers.

Q. I may simply -- I actually have to ask you if that's in fact what is stated in the last phrase of Paragraph 6.

A. Yes, it is. Just as I explained it earlier.

Q. So you can't reject the possibility that experiment effects were different in the two groups?

A. That's correct.

Q. So it may be true that the experiment effects were different in the two groups?

A. It is very, very unlikely is what it comes down to.

Q. But you can't reject that possibility?

A. Yeah. We're using statistical

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terminology. Let's be clear. In everyday language, yes, I do not believe on the basis of this evidence, that the effect was different in those two groups.

Q. Paragraph 7 refers to a slightly different test of the same proposition; is that correct?

A. No.

Q. The Cronbach's alpha is the same as the test described in Paragraph 6?

A. No. It is a completely different issue.

Q. Let's talk about the Cronbach's alpha in Paragraph 7.

First of all, have you used Cronbach's alpha in other analyses that you've run?

A. Yes.

Q. Can you give me one example?

A. We ran Cronbach's alpha when we were doing the very first work on cigarette smoking that I did as a student at Harvard.

Q. Is that the -- and the results are reflected in published surveys that we

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have, published articles?

A. Oh, I don't remember.

Q. What is the Cronbach's alpha testing in this case?

A. It's essentially looking at the strength of relationship between the four constituents in the motivation to quit index.

Q. And your conclusion is what?

A. That all four of these measures appear to, both on face validity grounds and in terms of this statistical test, tap a single underlying psychological construct which I have labeled "motivation to quit."

Q. And when did you first do the Cronbach's alpha analysis on these four different concepts?

A. Well, some time before I submitted my first report.

Q. Were there other concepts which you contemplated using and which you rejected as a result of running Cronbach's alpha on them?

A. No.

Q. It just so happens that the first

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four that you picked happened to satisfy the criteria you needed them to satisfy?

A. These are all four that I could have picked.

Q. But you haven't, you didn't contemplate picking additional ones; is that fair?

A. That's correct.

Q. All right. Let's talk about recoding of the motivation to quit.

Has the chapter six that's referred to in Paragraph 8, has that been published at this time?

A. No, it has not.

Q. Has it been peer reviewed at this time?

A. Yes, it has.

Q. When was that?

A. Oh, probably 1992 or 1993.

Q. Why did you recode the constituents of the motivation to quit index?

A. Because I believe Professor Viscusi perhaps in his recent report raised a question about the coding of the response

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categories for these items.

And despite the fact that the coding approach that I used in my first report's analysis was very, very standard in our field, quite commonly done and widely recognized to be robust to the review, I thought it would be helpful in this context to take seriously the issue that Professor Viscusi raised about people's interpretation of these phrases, draw on this very large literature that I had already reviewed, and use a somewhat different technique to analyze the data, one that is not particularly standard in the field yet, but one that is attentive to the issues that he raised.

Q. And your opinion is that people's perception of those phrases has been consistent over time first, correct?

A. Of -- yes.

Q. And that people's perception of those phrases is relatively consistent over different people, correct?

A. Yes.

Q. You indicate in the last sentence

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of Paragraph 8 that the studies -- I take it those are the studies referred to in chapter six of your article, correct?

A. Of my forthcoming book, yes.

Q. Of your book. "These studies suggest that the perceived spacing of the response options offered in the SRBI survey may have departed from equality to small degrees." Do you see that?

A. Yes.

Q. So to what degree did they depart from the equality?

A. I did no measurements in this context in order to assess that directly. I simply used measurements from these prior studies in order to approximate what may have occurred in this case.

Q. Okay. Do you know -- by depart from the equality, you mean that the difference between -- strike that?

MR. BSCHORR: Are you saying equality or equality? I think you are saying equality.

MR. MASSARO: Equality.

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MR. BSCHORR: But I wasn't sure it was being captured. Was it?

Q. Let's just take one example.

One of the questions asked whether people have "a great deal" of regret, "quite a bit" regret, regretted "somewhat" or regretted "a little."

A. Yes.

Q. And you assign those in your first analysis, numbers one, two, three, four, correct?

A. I think so, yes.

Q. You're saying in this last sentence that it may be that the difference between "a great deal" and "quite a bit" is not exactly the same as the difference between "quite a bit" and "somewhat," is that --

A. That's correct.

Q. Do you know what the relative differences in those terms is?

A. Well, as I said, drawing on the research that I reviewed in detail in the book chapter, I can make an assessment of what those interpretations may well have been in

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the minds of the SRBI respondents. And it is those numbers that I use in this analysis and that appear in the printouts that I forwarded on, which I hope made it to you.

Q. Am I correct that in your book, you scale these terms on a one to a hundred scale, or zero to 100 scale?

A. Yes.

Q. What would you assign "a great deal" on a scale of zero to 100?

MR. BSCHORR: Objection.

A. I'd be happy to go look at the book chapter and pull the numbers out for you if you like. I don't have all those numbers memorized.

Q. So you can't do it without looking at the book chapter?

A. Or the printout that you have.

Q. But you can't -- just the two of us sitting here right now, you can't do it on your own; is that fair?

A. I can't tell you what number I took from the book chapter and then put into these analyses, that's correct.

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Q. Do you have an estimate of what "a great deal" is on a scale of zero to a hundred?

A. Let's be clear. You're asking me about how I coded it in my analysis or what?

Q. Well, let's stick first with how you coded it in your analysis.

Do you have an estimate as to how you would have coded it on a scale of one to 100, "a great deal"?

A. "A great deal" was quoted as a hundred.

Q. What about in your rescaled analysis, what was it coded as?

A. I'm sorry. I thought that's what you were asking about. I'm sorry. Repeat that one more time.

Q. So on your rescaled analysis, you quoted "a great deal" as a hundred?

A. I guess now we have to qualify what you mean by "rescaled."

Q. The analysis that's reflected in this new report, which is Exhibit 1.

MR. BSCHORR: You're saying

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rescale from the linear one to five -- one to four; is that what we're talking about?

MR. MASSARO: One to four.

A. I think now we are getting very confused. Because the analysis is all based on a five point scale. You are saying four and I was willing to go with that a minute ago. But now I'm concerned that you may not be understanding this correctly.

So there are five levels to these variables, each one of them, and they are built from two ingredients each in three out of the four cases.

So maybe we need to go back. I want to be careful so I don't mislead you in any way. Maybe we ought to go back and start again in these question sequence, so I can be helpful.

Q. If you had to assign a number between zero and a hundred to the term "a great deal," what number would you assign to it?

MR. BSCHORR: Objection.

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A. For what purpose?

Q. For purposes of rescaling your motivation to quit index along the lines that were done in Exhibit 1.

A. Okay. Let me answer that. I think I can do that.

In doing this analysis, two stages were implemented. First stage involved looking at the studies cataloged in my book chapter which presented a series of phrases one at a time to respondents and asked them to describe the meanings of those phrases by either directing a number between zero and a hundred or drawing a slice of a pie or in some other way representing the quantity that each of those phrases represented to them, in isolation considered one at a time.

Now, I think in those studies, the average result for "a great deal" may have been about 69 or 70.

Now --

Q. I think by the way, you may not -- that really is the answer to my question.

A. Excellent. Okay. Good.

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Krosnick

Q. If you want to --

A. I'm not assigning number.

Q. If you feel the need to clarify it further, you may continue. But that's the question I'm getting at.

A. Just to fully answer your question, let me make sure, so you're sure and I'm sure that we both understand each other.

That the rest of the process I thought you asked me about then involves recalibrating those numbers to spread fully across the response dimension.

The reason being that when you take a phrase like "a great deal" evaluated in isolation and place it in a sequence in a survey question, then you send an additional message to respondents about the intended meaning of that verbal phrase, that this rating scale that you're offering is intended to spread across the dimension.

And Alan Parducci's work in particular is work that I mentioned in my report, I believe, as documenting that process that people go through in interpreting the

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intended meanings of points on rating scales.

So it is for that reason that the 69 or 70 is then rescaled to be a value of 100 in this analysis that I've done.

Q. I got you. Okay. So let's do, let's do both numbers then for each of the four phrases.

First for "a great deal" you would say that the meaning, the numeric term assigned to it at the initial level would be approximately 69, to the best of your memory?

A. I'd almost phrase it that way. I would say the average of studies that I uncovered that quantified that term, was in about that range, yes.

Q. So it was about 69 on a scale of zero to a hundred?

A. Yeah. I can't guarantee this. You know, there are hundreds of numbers on those tables and I don't have them memorized.

Q. Okay. Fair enough.

And what would it be on a scale of zero to 100 "quite a bit"?

A. I really am hesitating to offer

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these numbers. If you want to tell me what they are. I'm happy to respond. But I'm also happy to look at the book chapter. I don't think I can accomplish much by guessing numbers.

Q. You don't feel comfortable estimating that without looking at the book chapters?

A. Yeah, I don't. That's right. I mean, I like to give you answer -- let me just finish.

Q. Is the same true for "somewhat" and for "a little"?

A. I would like to answer you precisely and I would be guessing. I don't want to guess.

Q. Can you give a range?

A. For in.

Q. "Quite a bit.".

A. About a 50.

Q. And can you give a range for "somewhat"?

A. About 25.

Q. And a range for "a little"?

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A. About 12.

Q. And when you rescaled them, you rescaled them to what?

A. If you want to give me a calculator, I'm happy to do a calculation based on number use give me. I'm more than happy to be helpful, but memorizing this is not something that I did to help you in this case.

Q. That's fine. Your chapter also refers to certainty levels and adjectives used to describe certainty levels by respondents, correct?

A. That's not a term that I used.

Q. Okay. Probability levels?

A. There is information there on assessments of probability, yes.

Q. And do you know whether the average of the studies showed a higher probability value or close to certain as opposed to almost certain?

A. No, I don't recall.

Q. Do you know whether it assigned an average, higher average to "close to certain"

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as opposed to "quite certain"?

A. I don't recall.

Q. What about "close to certain" as opposed to "very probable"?

A. I don't recall specifically.

Q. Do you think the average person, if confronted with a choice between "close to certain" and "quite certain," which do you think has, which do you personally believe -- strike that.

I'm going to ask you to assign a number of zero to a hundred for "close to certain."

MR. BSCHORR: Objection.

A. You're asking me how do I personally interpret that term?

Q. Yes.

A. And you want to define the scale?

Q. Zero to a hundred.

A. What are the points being?

Q. Where zero is "if least certain," one "could possibly be," and a hundred is the most certain one can possibly be.

A. Okay. Thank you. And your

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question once again was for what phrase?

Q. "Close to certain."

MR. BSCHORR: Objection.

A. 94.

Q. What about "quite certain"?

MR. BSCHORR: Objection.

A. 78.

Q. A couple more. What about "very probable"?

MR. BSCHORR: Objection.

A. I'm sorry. What was the last one again that I said 78 to?

Q. 78 you had "quite certain."

A. "Quite certain," sorry, my mistake.

Q. Now the -- are you wanting to amend your answer?

A. Yeah, let me just think for a second.

Let me say 85 for "quite certain." What was your next one?

Q. "Quite certain" you would say 85. The next one is "very probable."

MR. BSCHORR: Objection.

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A. I'll say about 85.

Q. "Almost certain"?

MR. BSCHORR: Objection.

A. 95.

Q. And the last one "highly probable"?

MR. BSCHORR: Objection.

A. 90.

Q. Let's turn to page 4 of the report.

First, could you describe for me the purpose of the analyses that are discussed in Paragraphs 10 through 12 in the report?

A. Yeah. These analyses are inspired by a concern raised by Professor Viscusi in his most recent report in which he made assertions about whether Americans' perceptions of relative risk or their perceptions of what I call the risk differential might be more relevant to people's decision about smoking or not.

In addition, if I understood correctly, Attorney Williams, who asked me questions in this room last time around, I

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believe, if I understood what he was asking, was asking about absolute risk levels.

And so putting together his questions with Professor Viscusi's report suggested a worthwhile comparison of these three different ways of measuring people's perception of the risk of smoking.

Q. Okay. And were you hoping to reach a conclusion about which of those three ways is a better predictor of quitting behavior?

A. No.

Q. Did you reach any conclusions about which of those three ways is a better predictor of people quitting smoking?

A. Yes.

Q. And what's that conclusion?

A. That relative risk is a better predictor than absolute risk or the risk differential.

Q. When you say you weren't hoping to reach a conclusion, what led you to do the analysis if you weren't hoping to reach a conclusion about that issue?

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A. I wasn't hoping to identified one as better than the others. I was simply taking seriously the questions that had been raised and looking at the data to see if they could be informative about the extent to which Americans did or did not use each of these possible ways of representing the risk of smoking when making their own decisions about whether to continue smoking or to quit.

Q. But going into it, you believed that running this test would help you reach a conclusion on that subject?

A. Yes.

Q. Okay. Can you briefly describe what the test you ran in Paragraph 11 is?

A. Okay.

Q. Strike that.

First of all, you ran two different types of tests, correct?

A. Well, I did two analyses; one that sets the stage for a second. The second one building on the first one.

Q. And what's the first one?

A. Well, I simply looked at the

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relationship of each of these risk measures to actual quitting behavior.

And to do so, what I wanted to do was to explore how the proportion of quitters varies with perceived risk. So I divided the sample into six groups of equal size to allow for equal precision at estimating this percentage at each point along the distribution, and computed the percentage of people in each of those six groups who had quit smoking. I did that for each of the three risk measures.

Q. And the fact that there is a linear trend for one measure but not for another -- strike that.

Does the fact that there's a linear trend for one measure as opposed to another lead you to draw any conclusions?

A. Yes.

Q. What is your conclusion if there is a linear trend for a measure?

A. Well, in this particular case, if people are using a particular perception of risk to decide whether or not to quit smoking,

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then one would expect a monotonic relationship such that increased perceived risk would be associated with increased quitting behavior.

Now, it doesn't have to be a linear relationship, per se. But a linear test often is a simple and efficient way to test for a monotonic relationship.

Now, in this case, seeing a significant linear relationship in one case and not seeing a significant linear relationship in another suggests that the latter variable results are not consistent with the idea that people use that in deciding whether to smoke or not.

Q. This is just to be a little more concrete.

You did see a linear relationship in the case of relative risk, correct?

A. Yes.

Q. And you did not see a linear relationship in the case of the other two risk measures?

A. No, that's not correct.

Q. Okay. What is correct?

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A. Well, in the case of the other two measures, the risk differential did, in fact, reveal a statistically significant linear trend but one that was notably weaker than the linear trend that existed for relative risk.

In the third case, absolute risk there, the linear trend was not statistically significant.

Q. And because the linear trend in absolute risk was not statistically significant while the linear trend for relative risk was statistically significant, that fact alone supports your conclusion that relative risk is a more important determinant of smoking behavior than absolute risk?

A. Yes. Although we have to be careful here. Because these three measures of risk are correlated with each other.

And that's why I did the supplementary analysis to address the question you're raising more directly and usefully, I think, than can be done alone by looking at these relationships.

Q. If you only had the linear

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analysis that you did, would you say that that -- would you be able to have an expert opinion as to whether relative risk or absolute risk were more important predictors of quitting behavior?

A. When you say "linear analysis," do you mean the analysis of linear trend described in --

Q. Yes.

A. I just want to make sure.

I would conclude from looking at this that relative risk was more prevalently used by people to decide whether or not to smoke than absolute risk if -- excuse me. Yes, than absolute risk. And also that relative risk was more prevalently used than the risk differential.

Q. Okay. And the reason you would conclude that is because the linear trend is statistically significant in the case of relative risk and is not statistically significant in the case of absolute risk?

A. That coupled with the data. There is no hint when you look at these six numbers

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of a consistent monotonic trend of increasing quitting rates with increased perceived in absolute risk.

Q. By "these numbers," you meant the numbers for absolute risk, correct?

A. Yes, I did.

Q. And then what's the second test that you ran?

A. In Paragraph 12 you're asking about?

Q. Correct.

A. So that analysis is then intended to predict quit rates simultaneously using all three of these risk measures. Because as I said, they are correlated with each other to some extent and variance. That appearance, to be attributable to one could, in fact, be attributable to another instead.

So this analysis says holding constant each of these, is there any additional variance explained in quitting rate by the one.

This analysis comes really much directly out of conversations that I had with

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Attorney Williams here in this room a few weeks ago when he was presenting numbers and he said, Well, here are some people who have different risk differentials and absolute risk. He didn't quite put it the way. But who all have the relative risk. Maybe these numbers make it different as well. These analysis indicate that they do not in quit rates.

Q. So the result of your analysis is that absolute risk and perceived risk differential -- strike that.

The result of your analysis is that perceived absolute risk is nonsignificant, correct?

A. Yes.

Q. And perceived risk differential is nonsignificant, correct?

A. Correct.

Q. But perceived relative risk is significant?

A. Correct.

Q. And from that fact, those three facts, you conclude that relative risk is a

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more important predictor of quitting behavior than either those other two risk measurements?

A. Correct.

Q. And if, in fact, it turned out that risk differential was significant and the other two measures were not significant, what would your conclusion be?

A. That the risk differential was the more effective predictor of quitting.

Q. The last sentence of Paragraph 12 says, "These analyses reinforce my opinion that perceived relative risk is a determinant of whether or not people smoke."

You're not opining that it is the only determinant of that question, correct?

A. Correct.

Q. Do you have any opinion as to whether perceived absolute risk is, in fact, also a determinant of whether or not people smoke?

A. Let me be clear in answering this. Perceived absolute risk is an ingredient of relative risk. So it does have an impact in the sense that it is combined

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with other perceptions to yield relative risk.

It does not on its own appear from these data to have any independent impact on quitting likelihood while controlling for the other variables.

Q. Okay. And do you have any opinion as to whether it has any independent impact on quitting behavior?

A. This data suggests to me that it does not.

Q. And --

A. Sorry. To be clear, I was referring to absolute risk in that last.

Q. Correct. And do you have any opinion independent of these data as to whether it is a determinant of quitting behavior?

A. Let's be clear. You're asking again about a direct effect on quitting independent of --

Q. Relative risk.

A. -- its impact on relative risk? I know of no other evidence to suggest that it is.

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Q. So do you have an affirmative opinion that it is not an independent determinant of quitting behavior?

A. I can tell you that from all the evidence I know of on this point, there is no evidence that it is a determinant and, therefore, I would conclude, at least on that basis, that it is not.

Q. And you're expressing an expert opinion here in this case that it is not?

A. Based upon this evidence, yes.

Q. And the same thing for perceived risk differential? Do you have an opinion as to whether it is a determinant of whether or not people smoke?

A. Yes, I do.

Q. And what's that opinion?

A. Based on this evidence, my opinion is that it is not a determinant.

Q. Do you have an opinion as to -- strike that.

In the regressions that are discussed in Paragraph 12, you have assigned each smoker a number from one to six; is that

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correct?

A. That's correct.

Q. That's each -- each smoker or former smoker --

A. Thank you.

Q. -- gets a number from one to six?

A. Yes.

Q. Did you consider instead of assigning them a number from one to six, using the actual risk number that they expressed in the survey?

A. Yes.

Q. I take it, did you, in fact, do that?

A. Do what?

Q. In fact run an analysis in which you used the actual risk number rather than a number from one to six for each smoker or former smoker.

A. No.

Q. So why did you not do that? You considered it, but you rejected it, it sounds like?

A. That's right.

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Q. Why did you reject it?

A. I rejected it based on the nature of the distribution of the variables involved. That when you want to compare three variables like this, their distributions are very -- excuse me. Let me start carefully here.

In the case of relative risk, the distribution is what we call highly skewed. That is that most people high up at the low-end of relative risk and there is what's called a long tail whereby some people have values, very extremely high values on perceived relative risk.

Now, some of those very high values are the result of relatively arbitrary decision that I made about four percent of the respondents who had a value of zero on the denominator of relative risk.

That is, the people who are asked out of a thousand nonsmokers, how many would get lung cancer. The answer for a small fraction of people was zero. Those people have an undefined relative risk. And so in my

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calculations, I recomputed their value after recoding the denominator to be one.

Q. Let me stop you there.

So the arbitrary decision you referred to was assigning people who had said zero a number one for purposes of your calculation; is that the decision you are referring to?

A. Yes.

Q. Okay. Go ahead.

A. So that decision placing people at one determines to some extent how high, just how high their relative risk values would go. If I move that number around "somewhat", that very small fraction of the respondents would also move. And they, some of them tend to be out in the tail of this distribution.

Now, a highly skewed distribution with a long tail has a very large variance. And that large variance is well-known to undermine statistical tests using conventional statistics that presume normal distributions and multivariate normality.

So to conduct a conventional

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statistical analysis with distribution is not typically a sensible thing to do.

Now, it turns out that the risk differential is more symmetric. It is not quite so skewed but it has very long tails, small tails.

So again, there is a large variance there that handicaps that measure.

The risk -- excuse me. The absolute risk variable is not quite so skewed. In fact, it has more of a normal distribution but it is a very spread distribution with a variety of peaks in it.

So in order to begin an analysis like this into a way that allows for robust estimation of the percentage of smoker whose have quit at various points along these distributions with enough reliability at each of those points to generate plausible results, I recoded those strange distributions into essentially a flat distribution with equal proportions of people in each of these six groups.

Therefore, to use the words that I

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used in the report, leveling the playing field so that we could look at groups of the sample of equal size to then in a fair way compare the extent to which they could predict quitting smoking.

Q. So you considered running the analysis using the actual risk numbers that the survey respondents used, but you rejected it because of the large variances in that data?

A. No, it is not only the large variances, it is shape of the distributions, the very long tails, and the fact that the distributions are so different from each other that they would, I believe, yield unreliable results if one were to analyze them as they appear there.

I believe if one could get a gigantic sample, hundreds of thousands of people that would then provide reliability at various points in the region, one could have more confidence in doing a fuller analysis.

Q. Let me ask you about the chronology of that.

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You considered it running it, running the statistical regression using the actual numbers that people used but then you looked at the data and saw the variances and other distribution problems that you identified and instead decided to go with the ordinal one to six scheme; is that correct?

A. Not really. I have been dealing with these data for months now and I'm very well aware of the distribution of these variables. And so, you know, it is -- it wasn't at that point that it seemed obvious that it didn't yield a fair comparison to use the raw distributions.

In fact, in my very first report in cases where I did correlation analyses involving relative risk because of the distribution, I converted it to percent tile.

Q. So is the use of the ordinal approach assigning each smoker and nonsmoker a number between one and six, including one and six, the first option that you then considered?

A. Yes.

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Q. And you settled upon that option and ultimately did use that option, correct?

A. Yes.

Q. But somewhere along the way, you also considered using the actual risk numbers that the people had given in response to survey questions?

A. Yes. The chronology was such, as I recall, that I sat down, it occurred to me I could do this analysis in a way that would be helpful for this case.

I said, hum, I can predict quitting using these three measures of risk. Gee, but they are so differently distributed and the skewness and the long tails are going to provide for not fair comparisons, so I got to find a way for normalizing these distributions more so than they are now.

It seemed to me a simple fair, nonpartisan way to do that is to do this chunking into six groups.

Q. What was the first way that you considered doing?

A. That's it.

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Q. The first way was to use the actual risk number, but then you rejected that because of the problems that you identified?

A. I considered that not to be a fair test, yes.

Q. But it was the first way that came to mind?

A. Yeah. I mean, sorry, let me be clear.

I'm guessing here about the sequence in which I had these ideas. I certainly know that the six grouping is an alternative to using the raw distributions.

Q. And you never have run an analysis using the actual risk numbers that survey respondents gave, correct?

A. That's correct.

Q. And you have no idea what that analysis would show?

A. I don't know that I have no idea, I have some ideas.

Q. Okay. Do you have some suspicion as to what that analysis would show?

A. Yes.

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Q. What's the suspicion?

A. Well, first of all, based on the results that you see here, there really is no relationship at all between absolute risk and quitting when absolute risk is considered by itself.

And so I would be very surprised if that variable had an effect in a multivariate analysis using the raw distributions of those variables.

I could imagine that the other two variables would have either no effects because of the skewness of their distributions, or that one of them would have a significant effect and the other one would not.

In fact, the analysis reported later here does use the full distribution of the relative -- excuse me, of risk differential variable. And that revealed a significant relationship with quitting.

So clearly using that full distribution doesn't completely eliminate the relationship in that case.

I don't know whether the full

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distribution for relative risk may or may not eliminate it. Then the question would be, if it were weakened, which I certainly expect it would be, is it weak evened slightly more or slightly less than the relationship for the risk differential.

So I guess what I'm saying is I can imagine one of three outcomes. I certainly would expect -- no, I can't even say that -- that either one of those two predictors would be significant, the other would not, both of them could be significant, or neither of them could be significant.

But I have confidence that the absolute risk is unlikely to have a predictive effect in that relationship.

MR. BSCHORR: John, are you ready to go on a new area? Do you want to take a break?

MR. MASSARO: Want to take a break? There might even be lunch around here.

MR. BSCHORR: We have been going an hour 45 minutes already.

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Krosnick

THE VIDEOGRAPHER: The time is 1:49 p.m. and we're going off the record.

(Krosnick Exhibit 2, 4/4/01 Supplemental Reliance List, marked for identification, as of this date.)

(Whereupon, a short recess was taken.)

THE VIDEOGRAPHER: The time is 2:18 p.m. and we're back on the record.

BY MR. MASSARO:

Q. Welcome back, Dr. Krosnick.

A. Thank you.

Q. We've shown you Exhibit 2. Can you please identify that for the record?

A. I don't recognize this. I could read to you what it says. It says Professor Jon A. Krosnick, Supplemental Reliance List, April 4, 2001.

Q. But you have not seen this list before?

A. No, I haven't.

Q. Did you provide counsel with a list of additional materials that you were

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relying upon since your last deposition?

A. I've been providing counsel with relevant references all along throughout my preparation for testimony.

Q. Do the materials identified in Exhibit 2 appear to correspond to additional materials that you've identified to counsel as material you were relying upon since your last deposition?

(Witness reviewing document.)

A. I don't have any particular recollection of when some of these references were turned over. I mentioned them to counsel. Some I know are things counsel has given me but I have not necessarily red.

Q. Do you have a particular example in mind?

A. Of what?

Q. Of ones counsel has given you but you haven't read.

A. At the end here I see a long list of Viscusi documents. Some of which I have read, some of which I haven't.

Q. Which ones have you not read?

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A. I don't think I can tell you with confidence.

Q. Can you tell me with confidence which ones you have read?

A. I don't think I can tell you with confidence that I read any of this. I may have looked at them briefly, but I'm not.

Q. Let me ask you about one item on here, the last item on page 5. The Oskamp text.

A. Yes.

Q. Are you familiar with that text?

A. Yes.

Q. And are you relying on it for your opinions in this case in any way?

A. The reason it is on here is that in my last deposition here I was asked, I believe -- let me say it clearly, I'm not sure when.

But I was asked at a deposition about the numeric scaling of the response choices for the ingredient for the motivation to quit index and the combining of them.

And I was asked about what

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precedent, if any, is there for doing that sort of thing in my field. And I said it is very standard practice. And so in case there are any questions about the extent to which it is standard practice, I grabbed a few handbook chapters and textbooks to include here that mention that sort of procedure as standard.

Q. So are you relying on the Oskamp text, then, as support for the proposition that it is standard in the profession to conduct the analysis in the way that you did?

A. One piece of, yes.

Q. It is one of the sources that you are relying on for that proposition?

A. That's right. And it is only for one piece of the analysis that I did.

Q. Are there any other items on this list that support that particular proposition?

A. There is a chapter here, Dawes and Smith, D-A-W-E-S and Smith, that is included for that reason as well.

The Likert, L-I-K-E-R-T, reference is another one.

(Witness reviewing document.)

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A. And that is all.

Q. Let me ask you for each of them, starting with Oskamp at the back.

Did you consider it an authoritative text, at least on the point for which you're relying on it on?

A. I don't know what you mean by authoritative.

Q. Do you agree with the opinions expressed in Oskamp?

A. Yes. On this point.

Q. Is the same true for Likert?

A. Yes.

Q. And for Dawes?

A. Yes.

Q. Let's move on then. Back to Exhibit 1 which is the supplemental report. We are up to the last section beginning on page 5 and carrying over on page 6.

A. Uh-huh.

Q. There you describe some additional logistic regressions that you ran; is that correct?

A. Yes.

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Q. And what was the reason that you ran those regressions?

A. In his most recent report, Professor Viscusi raised a question about the design of the measures included in the SRBI survey for assessing people's perceptions of the risk of smoking. And in particular he said two things. One is that he believed it is normal to ask people for a percentage out of a hundred, rather than a number out of 1,000.

And in addition, he believed that asking two questions to measure perceptions with regard to smoker and not smoker specifically is more difficult and error prone than simply asking one question along the lines of the Audits & Surveys survey questions that he analyzed, that sort of got at the perception of the risk differential in his opinion reasonably accurately in a single step rather than in two steps.

So in order to address those concerns, it occurred to me that because I had access to the data from the Audits & Surveys

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surveys that had implemented this single-step approach asking about a hundred smokers, that there was an analysis that I could do to compare the quality of those data to the quality of the data yielded by the SRBI measures. So that's what I did.

Q. So one of the propositions you were testing was whether the quality of the data is better when you ask out of a hundred versus when you ask out of a thousand, correct?

A. Well, to be clear, the design of these surveys is such that I cannot separately test that assertion from also testing the assertion that a one-step process is better than a two-step process. So all I can do is kind of compare the package of 100 smokers in a one-step process to 100 smokers in a two-step process.

Q. So you were testing both of those propositions, correct?

A. Really what I was doing was testing a more general proposition that my measures in the SRBI survey yielded less

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accurate assessments of the risk differential than did measures included in the Audits & Surveys survey. So it is not even a test of those particular propositions, everything about the measure.

Q. So the available data did not permit you to test just on its own whether asking out of a hundred was better than asking out of a thousand?

A. That's correct.

Q. But I take it, by that way, you still have -- you do have the opinion that asking out of a thousand is better than asking out of a hundred, at least in this context?

A. Yes.

Q. Okay. So that was your motivation in approaching these tests. Can you briefly describe what the tests were?

A. Briefly what I did was to compute an association between the risk differential measured in each of the three surveys with status as either a current or former smoker.

Q. And the outcome of that test was what?

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A. That the relationship was stronger in the SRBI survey data set than either of the Audits & Surveys survey data set. And that led me to conclude that the measure and approach used in the SRBI survey was no worse than that used in the other surveys.

Q. Okay. Does it lead you to conclude affirmatively that the measure used in the SRBI survey was better than the measures used in the other surveys?

A. To do that, I would need to do a test of statistical significance comparing between the two surveys to assess the probability there was superiority there. I haven't done that test, so I don't -- I didn't feel the need to make a statement about which is better.

I was simply responding to the question of whether there was significant enough additional error to obviously compromise predictability.

Q. The last sentence of your report says, "This comparison suggests that the SRBI measure of risk differential contains less

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error which indicates that using the base of a thousand people did not compromise measurement quality."

First then, do you have the opinion that the SRBI measure of risk differential has less error than the measure of risk differential used in the two surveys relied upon by Professor Viscusi?

A. Well, if you don't mind my saying that those two surveys are these Audits & Surveys surveys discussed here. Only because I don't know what he is relying on or is not, yes, I agree with that.

Q. So is it fair to say then that the results of your test are that you have two separate opinion, one that the SRBI measure of risk contains less error than those two Audits & Surveys measure?

A. No. It contains no less error. Excuse me, my mistake. Yes, you're correct. My miss tame.

Q. Contains less error?

A. Yes.

Q. And then the second opinion is

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that the use of a thousand versus a hundred did not compromise measurement quality in the SRBI survey?

A. Right.

Q. And that's based on the fact that the regression coefficients were nonsignificant in the case of the 1997 Audits & Surveys, but were significant in the case of the SRBI survey?

A. No.

Q. You did find in fact that the regression coefficient was -- did you find that the regression coefficient was significant in the case of the SRBI survey?

A. Yes, I did.

Q. And you found that it is not significant in the case of the 1997 Audits & Surveys?

A. Yes.

Q. And you found that it was significant in the case of the '85 survey?

A. Yes.

Q. And the fact that the coefficient was larger in the SRBI survey data than for

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the other two Audits & Surveys surveys is what forms the basis for your conclusions as stated in Paragraph 14?

A. Correct.

Q. And by "larger" you mean more negative?

A. Yes. Thank you.

Q. Which means that there was a greater motivation to quit; is that correct?

A. I don't know what you're asking.

Q. If the coefficient was more negative, that meant that it increased the chances of someone's likelihood of quitting?

A. Okay. Let me see if I can explain this.

These associations here are between perceptions of risk on the one hand and having quit among current and former smokers. So what this says is the highest a person's perceived risk differential, the more likely they are to have quit. That's what that negative sign means.

Q. So the negative sign indicates that if someone has a higher perceived risk

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differential, they are more likely to be a quitter --

A. To have quit.

Q. -- at the time of this survey?

A. Yes. Thank you.

Q. So that if the signs were reversed, if it were all the same numbers but all the signs were reversed, that would -- would that lead you to the opposite conclusion about the reliability of the various measures?

MR. BSCHORR: I'll object.

A. Well, the sign can be reversed. The sign is an arbitrary result of how the variables are coded. And so you can only interpret the sign in light of how the variables are coded.

So in other words, if we flip the coding of the variable, then you can get the reverse sign. But it wouldn't mean that.

Q. Sure. Let's assume the coding of the variables is exactly the same, but the outcome is that the SRBI coefficient were positive .062, the 1997 Audits & Surveys surveys were positive .047 and the '85 Audits

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& Surveys surveys were positive .035. Are you with me with that hypothetical?

A. Yeah, okay.

Q. In that world, that would mean that the SRBI survey would -- the SRBI risk measure would be inversely correlated with quitting behavior, correct?

A. Yes. Well --

Q. The people would be less likely to quit, the greater their risk perception is?

A. Only if the relation were statistically significant.

Q. Correct. Let's assume the same significance as well.

A. Okay.

Q. In that scenario, the only difference between that world and this world is that the sign has changed from negative to positive.

A. Okay.

Q. So that in that case, the SRBI survey risk measurement would be inversely correlated with quitting behavior?

A. Yes.

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Q. People would be less likely to quit, the greater the risk they saw?

A. Yes.

Q. Would that lead you to conclude, then, that the SRBI survey's measure contained more error than the '85 Audits & Surveys' measure?

MR. BSCHORR: Objection.

A. I would be reluctant to draw a conclusion along these lines from such results.

MR. MASSARO: We need to take a break for the tape change.

THE VIDEOGRAPHER: The time is 2:35 p.m., April 20, 2001. This is the end of tape number one of the videotaped deposition of Jon A. Krosnick. We're going off the record.

(Discussion off the record.)

THE VIDEOGRAPHER: The time is 2:36 p.m., April 20, 2001. This is tape number two of the videotaped deposition of Jon A. Krosnick. We're back on the record.

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BY MR. MASSARO:

Q. So in the analysis that you did run, the fact that the coefficient was larger and more negative, is what supports your conclusion that the SRBI measure of risk contains less error?

A. That's correct.

Q. But if the results were reversed and the coefficient were larger and therefore more positive, you would not reach the reverse conclusion?

MR. BSCHORR: Objection.

A. I would be hesitant to reach a conclusion, yes.

Q. Would you say, nonetheless, that the test supported the conclusion that the SRBI survey had more error than the 1985 Audits & Surveys measure in that scenario?

MR. BSCHORR: Objection.

A. No.

Q. Would it have any evidentiary value at all with respect to the question of whether the SRBI measure contains less error or more error than the 1985 Audits & Surveys'

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measure?

MR. BSCHORR: Objection.

A. See, you have to view any statistical test like this in the context of theory. That theory guides your interpretation of numbers in this kind of a situation.

And so what I'm doing here is looking at something that's called correlational validity, when you have two different measures of the same construct and you correlate it with some third variable; in this case, status as of current and former smoker. Then you can use the size of those coefficients to infer the relative validity of the two competing measures, as long as the association observed makes theoretical sense.

And in this case, the premise of this analysis is that people who quit smoking, according to very large literature, do so primarily because of concerns about health effects.

So on those grounds, it seemed to me reasonable in this analysis to explore the

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relationship between perceived risk and status of a person as a current or former smoker. Now, that theory anticipates a negative relationship given the coding of the variables here.

Now, if I were to see a positive relationship between these variables, as you're talking about -- and you're saying it would not only be a positive relationship but it would be a statistically significant relationship as well -- I would find that troubling and puzzling based upon the theoretical premise that brought me to this analysis.

Then, in other words, looking at this result by saying, I see the relationship that I expect and if anything, it's stronger with this measure than that measure, therefore, this measure appears to be no worse and, in fact, contains less error than that measure.

But if the relationship were reversed, I would say the basic foundation of this analysis is called into question.

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Because in fact, former smokers do not perceive a greater risk, in which case, it is not clear what may be confounding the relationship, and so on, and we should draw no conclusion. That's why I would not draw a conclusion.

Q. So if the coefficients were reversed in the sign in the manner we have been discussing, you would not want to draw any conclusions at all from the test; is that you're saying?

A. I could say, Gee, the relationship is reversed here. But I would have more difficulty drawing any conclusion about the relative adequacy of the measures that we're competing.

Q. And the reason for that would be because the result of the test would be inconsistent with one of the assumptions that you entered the test with?

A. Precisely.

Q. And the assumption that you test with is that increased perception of risk leads to increased quitting behavior?

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A. Yes.

Q. Is that -- do you have an opinion as to whether that assumption is accurate?

A. Yes.

Q. You believe that that is accurate?

A. Yes, I do.

Q. You believe that increased perception of risk leads to increased quitting behavior?

A. Yes, I do.

Q. And in particular, you believe that increased perception of risk differential leads to increased quitting behavior?

A. No.

Q. That is the assumption that underlie this is particular test, is it not?

A. No, it isn't. As we talked about earlier, risk differential and relative risk are both, when examined independently, correlated with quitting behavior; relative risk more powerful than the risk differential. And when both are considered in the same simultaneous analysis, relative risk maintains a significant effect while the risk

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differential does not when the -- in the analysis that I described earlier.

The results here are predicated on that logic that when considered individually, this measure of risk -- not the optimal measure of risk -- a less than optimal measure of risk that is correlated with what appears to be a more optimal measure of perceived risk is associated with quitting behavior. So I can use that relationship as a gauge of measurement of quality.

Q. Let's set aside whether it is the optimal measure of risk or not.

A. Okay.

Q. It is an assumption that in the tests that you're running in Paragraphs 13 and 14, that perception of risk differential, increased perception of risk differential leads to increased quitting behavior?

A. No.

Q. And do you believe that increased perception of risk differential correlates with quitting behavior?

A. Yes, I do.

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Q. Is that an assumption of the tests that you're running in Paragraphs 13 and 14?

A. Yes, it is.

MR. MASSARO: Let's have this marked as the next numbered exhibit.

(Krosnick Exhibit 3, Printout of Krosnick's file "Output", marked for identification, as of this date.)

Q. Dr. Krosnick, can you identify this?

A. I see this is labeled "Printout of Krosnick's file named 'Output - Audits & Surveys Regs - Risk Diff Cause Quitting."

Q. Looking at the second page of the exhibit, does the exhibit, in fact, appear to be what the first page indicates it is?

(Witness reviewing document.)

A. It seems reasonable, yes. I don't have a specific detailed memory of what these output files look like.

Q. There is an indication that the file was -- the output was created on March 28, 2001, does that seem about right for when you ran the logistic regression that's

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referred to in Paragraph 14 of the report?

(Witness reviewing document.)

A. Yes. It says output created March 28, yes, I see that.

Q. Does that seem about right for the time period which you ran the logistic regression which you refer to in Paragraph 14 of your report?

A. It sounds possible, yes.

Q. And it has an input line, input for data, you see the description there, "2000 smoking study\Viscusi 1985\Viscusi 1985 survey data.sav"?

A. Yes.

Q. What does that indicate?

A. That indicates a file on my hard drive of the data for the 1985 Audits & Surveys survey.

Q. And the number of rows in working data file is 3500; is that right?

(Witness reviewing document.)

A. It says that. I'm not familiar with this particular piece of printout, the notes. But that seems to say that, yes.

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Q. Then in the syntax, there is a description, "logistic regression Var equals q4," what does that mean?

A. Of dependent variable is q4.

Q. Is "q4" is question four from the Viscusi, from the 1985 Audits & Surveys survey?

A. I'd have to look at my notes to be certain. But that seems like a plausible interpretation.

Q. Under the dependent variable end coding, towards the bottom there, do you see that?

A. Yes.

Q. What does "internal value" mean?

(Witness reviewing document.)

A. I assume that SPSS is recoding this variable to be a 0,1 value pair as opposed to a 1,2 value pair which is what was provided in the data.

Q. SPSS is the software?

A. Yes.

Q. When you say the software is recoding it in that manner, you determined

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that it should be recoded in that manner; is that correct?

A. No, I did not determine that. SPSS may recode dichotomous dependent variables for logistic regressions for 0,1 regardless of how they are coded. Perhaps that may be what this is about.

Q. So you're not sure whether you're the one that decided it should be 0,1 or if that's just a function of the software?

A. I'm certain that there is no command here whereby I instructed it to do any such recoding.

Q. And what this means is that the original value is the value in the 1985 Audits & Surveys data?

A. I would have to go back to my data set to confirm this for you.

Q. Well, the internal value, do you know what the internal value is? What does that mean "internal value"?

A. Again, I'm not completely sure. But I presume this is indicating that the package has recoded the variable which was

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coded originally 1,2 in the data set provided to SPSS as 0,1 for this analysis in the form shown on this table.

Q. Got you. So you're presuming that it means that in the original data, if the variable was a one, it is being recoded to be a "0" for purposes of your analysis?

A. It may do that. I would be reluctant to offering an opinion on this without consulting the manual.

Q. You can't tell from looking at this Exhibit 3 on its own?

A. That's correct.

Q. What other, is there some other possibility that -- specific possibility that you're considering?

MR. BSCHORR: Objection.

A. I'm not considering any possibilities.

Q. You can't, again, make heads of tails of this is what you're saying?

MR. BSCHORR: Objection.

A. No. If you would like me to provide a detailed explanation of what this

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particular piece of the output would mean, I would need to consult the manual. But without doing so, I can't tell you for sure at the level of confidence that I would like to have in this deposition how to interpret this.

Q. So you don't have -- you don't feel comfortable answering the question of what the internal value means?

A. That's correct.

Q. But you are certain that you yourself never made a decision that original values in the 1985 survey data should be recoded from 1,2 values into 0,1 values?

A. All I can do is look at this printout and tell you what I see on this printout.

Q. I'm just asking you really for your memory of what you did in running this reanalysis.

A. Yeah, and I can't tell you the specific procedure.

Q. So --

A. By looking at my report here in which I describe this analysis, I describe how

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Krosnick

this variable is coded in Paragraph 13: "0" for former smokers, "1" for current smokers. And then in Paragraph 14, I talk about how I coded the perceived risk differential.

And that would be the account of coding that I would stand behind in describing to you how the result produced in Paragraph 14 came about.

Q. Okay. So Exhibit 3 reflects a discussion in 1413; is that correct?

MR. BSCHORR: Do you want to look through the entire length?

(Witness reviewing document.)

A. The numbers that I see in this print out correspond to some of the numbers reported in Paragraph 14, yes.

Q. Okay. Paragraph 13, no?

(Witness reviewing document.)

A. I was looking at --

Q. My question was about Paragraph 13, actually.

A. Okay. What I'm describing to you is what's in Paragraph 14 in terms of the significance test in the coefficients.

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Q. Is Exhibit 3, the logistic regression on the perceived, the effect of the perceived risk differential on smoking status in the 1985 Audits & Surveys data?

A. Partly. Part of it is.

Q. What part?

A. The first part. Page 1, page 2 and a little tiny bit on the top of page 3.

Q. And on page 1, then, the discussion of the dependent variable in coding, there's a discussion of the variable, whether someone is -- the variable that describes whether someone is a current smoker or former smoker, correct?

A. I'm sorry. One more time. On page?

Q. Looking at page 2 of the exhibit?

A. Page 2 of the exhibit.

Q. Which is --

A. Page 1 of the printout. Okay.

Q. -- page 1 of the printout, there is a description at the bottom of dependent variable end coding; do you see that?

A. Yes, I do.

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Q. And the dependent variable is the variable that describes whether someone is a current smoker or a former smoker?

A. Yes.

Q. And in your logistic regression, the former smoker is coded as a "0" and a current smoker is coded as a "1"?

A. That's correct.

Q. And that is -- where did you, from where did you determine whether the person who answered the 1985 survey was a former or current smoker?

A. From the original data set.

Q. And what part of the original data set?

A. There is a variable in there which may be in the original data set called q4 which is smoker status.

Q. And from looking at Exhibit 3, the second page which is the page we've been looking at, if the value of q4 was one in the 1985 Audits & Surveys data, then that person was a former smoker and they were coded as a "0" in your logistic regression?

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A. I can't say that. You can say that if you want to, I can't. I know when I did the analysis that's what I did. I don't know that what appears on this page shows that.

Q. When you did the analysis, if the person was coded as "1" for question four in the Audits & Surveys data, you coded them as a "0" in your -- a former smoker in your analysis?

A. I can't recall how the original data was coded sitting here today without consulting my original notes.

What I can tell you with confidence is that however that measure of smoking status was coded, I transformed it so that "former smokers" were coded "0," "current smokers" were coded "1," and "never smokers" were treated as missing the values.

Q. Let me ask you, that is slightly above the dependent variable discussion. There is a discussion of case processes summary; do you see that?

A. Yes.

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Q. And there's a mention of missing cases, 1748. Do you see that?

A. Yes.

Q. How did you determine what a missing case was?

A. I didn't personally determine what a missing case was. The program dropped cases that had any missing values on either of the variables involved, the independent or the dependent variable.

That means that if somebody was a never smoker or failed to answer the smoker status question, they had a missing value. And if a person failed to answer the risk differential question with a number between zero and 100, they were treated as having a missing value.

Q. So, what is the implication of being treated as a missing value?

A. Those cases are not included in this analysis.

Q. So not included in this analysis is anyone who was a never smoker?

A. Correct.

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Q. Anyone who failed to answer the risk differential question?

A. Correct.

Q. And anyone who provided an answer to the risk differential question that was not between zero and a hundred?

A. Well, what I said, does not provide a valid answer.

Q. Anyone -- so what is a valid answer and what's a not a valid answer?

A. I'm a little foggy on this. Because I believe in one of the surveys that was examined, there were cases in which people did not answer the risk differential question initially with a single number, but rather gave a range.

And those people in Professor's Viscusi's analysis were given a value in the middle of the range. I believe something of that sort. So they ended up in his analysis with what's considered a valid value.

Q. In your analysis, they would not be considered a valid value?

A. No. I replicated as closely as I

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could whatever he did.

Q. So then -- so tell me what an invalid answer to the question would be such that it would be excluded from your analysis.

A. I would have to reconsult the code book to give you all of the categories. But you know I assume it is either people who said I don't know what the risk differential is, or I refuse to answer the question about what the risk differential is, or the interviewer accidentally failed to ask that question or failed to get coded properly, or the respondent failed to answer the smoking status question either because they said they don't know or they refused or the interviewer failed to ask it or it failed to get recorded.

Q. Okay. I get what you're getting at.

A. Okay. Great.

Q. So if someone refused to answer the smoking status question, they would be treated as not a valid answer and they would be a missing case?

A. For this analysis, yes.

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Q. And if they didn't answer for one reason or another the risk, the perceived risk question, again, they would be treated as a missing value and excluded from your analysis?

A. Yes.

Q. Why did you want to exclude those?

A. Well, what I wanted to do in the analysis reported in Paragraph 14 of my recent report is to conduct an analysis that is parallel to what I could do with the SRBI data.

Now, in the SRBI survey, only people who were current or former smoker were asked to report their perceptions of risk and, therefore, were in a position to provide data examining the extent to which you can predict status as a current and former smoker using perceptions of risk.

Now, in the Audits & Surveys survey, not only were risk questions asked of current and former smokers, but in addition, never smokers were asked those questions as well.

But because there were no "never

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smokers" in the SRBI survey, I couldn't use them in any way in this analysis to have a parallel to the SRBI survey. In other words, there were no non -- never smokers to compare it to.

Therefore, to make this an apple-to-apple comparison, I eliminated those people from this analysis.

Q. And by "those people," you mean never smokers?

A. Right.

Q. And I imagine the same is true for people who failed to answer the risk perception question; I assume there were some people in the SRBI survey who failed to answer some of the risk perception questions; is that correct?

A. Yes.

Q. And they were excluded from your analysis --

A. Yes.

Q. -- in SRBI?

A. Yes.

Q. So for the same reason, you wanted

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to exclude them from your analysis of the 1985 Audits & Surveys survey?

A. Well, it is not -- I didn't have any choice. I had to exclude them because they didn't have an answer that I could use.

Sorry, let me just add one footnote just to be clear.

Q. Sure.

A. I may have misled you when I said the people would be treated as having missing values if they said don't know. In both surveys, people who said don't know were encouraged to offer an answer. And so I took seriously the answers that they offered when they were encouraged to do so in both surveys in a parallel way.

So I just want to be clear that not all initial don't knows were treated as missing, only those that people insisted they could not provide an answer.

Q. So if someone said don't know in response to the first time the question was asked but ultimately gave a number, those were not missing cases?

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A. Correct.

Q. But if they persist as saying don't know, then you treated those as missing cases?

A. Exactly.

Q. And they are not included in the logistic regression?

A. Exactly.

Q. Let me ask you about Paragraph 14. There is a parenthetical there where you indicate you "divided perceived risk differential by a hundred to make the resulting regression coefficients larger and easier to compare."

Did you divide the SRBI perceived risk differential by a hundred?

(Witness reviewing document.)

A. What I did is to make all of these comparable. So they began by placing -- for example, you're using this risk differential here. The risk differential ranges in its raw form between 100 and zero in the Audits & Surveys survey.

And so I divided those numbers by

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a hundred so as to produce -- it turns out these relationships in that raw form are -- yield very small coefficients with lots of zeros in front. They are essentially the same numbers but they have more zeros in front of them. So I divided by 100 in that case.

Now, in the case of the SRBI survey, the range, the possible range there is much wider. It's from a thousand to minus 1,000.

And so therefore, in order to get that on the same scale, I had to divide it by a thousand, not by a hundred.

Q. Okay. That was -- you just answered precisely the question I was asking.

A. Great.

Q. So you didn't divide all of the perceived risk differentials by a hundred, correct?

A. Well, I did it I believe in two steps. One is to make the SRBI number first comparable to the others, maximizing at a hundred, and then divided that number by a hundred.

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Q. I see. So you did divide them all by a 100?

A. Right. After a initial recoding.

Q. You divide them all by a hundred, correct?

A. Yes.

Q. But prior to dividing them all by a hundred, you first divided the SRBI responses by ten?

A. Yes.

Q. And you had to divide the SRBI responses by ten first in order to make them comparable to the Audits & Surveys responses?

A. Correct.

Q. Because the Audits & Surveys responses were out of a hundred, whereas the SRBI responses were out of a thousand?

A. Exactly.

MR. MASSARO: Let's mark this as the next numbered.

(Krosnick Exhibit 4, "Variables in the Equation", marked for identification, as of this date.)

Q. We had marked at Exhibit 4, I

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believe, a document. Can you identify that?

A. You'd like me to identify this?

Q. Yes. If you can.

(Witness reviewing document.)

A. It looks like the second half of the pages in Exhibit 3, which appear to be the analysis of the 1997 survey reported on Paragraph 14 of my report.

Q. What is the dependent variable?

A. The dependent variable in what?

Q. The logistic regression of the 1997 Audits & Surveys?

A. Okay. A variable called "smoker."

Q. And what's the independent variable?

A. It's a variable called "lung cest," L-U-N-G C-E-S-T.

Q. And what's your understanding of what the meaning of a dependent variable is? What is that variable capturing?

A. It is capturing the same thing described in Paragraph 13 of my report when this analysis is conducted which is the difference between current smokers and current

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smokers.

Q. It's meaning to capture whether someone is a former smoker or current smoker?

A. Correct.

Q. And the independent variable lung cest, what is that capturing?

A. That I believe is the respondents' estimate of the probability that a smoker will get lung cancer as a result of smoking, or directly the number out of a hundred smokers who would get.

Q. And then the purpose of the logistic regression is to determine whether the independent variable has predicted a value with respect to the dependent variable?

A. Yes.

Q. I'm learning.

And so the purpose of the regression is to determine whether the respondents' estimate of a probability that a smoker will get lung cancer are predictive of whether or not respondents are former smokers or current smokers?

A. Yes.

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Q. And the dependent variable, then, is going to be binary, the person either is a smoker or a former smoker, correct?

A. Current or former smoker, yes.

Q. There is a spot here. On the second page. That's reflected in treating them as a "0" or a "1," correct?

A. That's what was done for this analysis, yes.

Q. And the independent variable should then be a number between zero and a hundred, correct?

A. Not after dividing by a hundred, no.

Q. It starts out as a number between zero and a hundred, and then you divide that number by a hundred?

A. Right.

Q. So it's a number between zero and one?

A. Right.

Q. And it should be a range of fractional numbers between zero and one, correct?

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A. Yes.

Q. It is not a binary thing where someone should be either "0" or "1"?

A. Correct.

MR. MASSARO: Let's take a ten-minute break, five-minute break, sort of go through my checklist see where I am.

THE VIDEOGRAPHER: The time is 3:14 p.m. We're going off the record.

(Whereupon, a short recess was taken.)

THE VIDEOGRAPHER: The time is 3:26 p.m. and we're back on the record.

MR. MASSARO: Thank you, Dr. Krosnick. I don't have any further questions at this time.

I understand that counsel for another Defendant will be resuming the deposition at about five o'clock.

THE WITNESS: Very good.

MR. MASSARO: Thanks for coming up.

THE VIDEOGRAPHER: The time is 3:27 p.m., April 20, 2001. This is the

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end of tape number two of the videotaped deposition of Jon A. Krosnick to continue at five o'clock. We're off the record.

(Whereupon, a recess was taken.)

THE VIDEOGRAPHER: The time is 4:58 p.m.. We are back on the record. Mr. Counsel please introduce themselves is.

MR. WILLIAMS: My name is John Williams from the firm of Collier Shannon Scott.

Does everyone else need to be introduced?

EXAMINATION BY

MR. WILLIAMS:

Q. I guess I am introducing myself, Dr. Krosnick, because I was doing something else earlier today. Thank you for staying here so I can have the opportunity to visit again.

A. Certainly.

Q. Let me start by saying when I arrived, I was surprised to learn and

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obviously complemented to learn that you would refer to me as a peer reviewer on your third supplemental report.

I appreciate that. Since I'm appearing here in the guise of a faculty member, I would like to ask you if you did the homework I gave you from the last deposition.

A. In fact, I did.

Q. You did.

Let me refer to Krosnick Exhibit 2 from last deposition. This was a printout that we had done of the medians from your MTQ index; is that right? And "MTQ" stood for what?

A. You're naming it that way. It is up to you what you want it to stand for. I assume you mean motivation to quit?

Q. Right. And did you have an opportunity to determine whether these were properly calculated medians on the MTQ or motivation to quit index?

A. As I recall my homework assignment, I was asked to compute the median for the index which would be the second to

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last column here on this table which I did do.

Q. How did we do?

A. I saw numbers like these, yes.

Q. So if we were to present this on -- are you testifying on Monday?

A. I assume.

Q. If we were to present this on Monday, you would be able to confirm that the numbers on here are correct, that the medians that we had calculated of the MTQ are, in fact, accurate?

A. The second to last column, as I say, if you do it the way you appeared to have done it here, I get this same result, yes.

Q. Now, I want to ask you just a few questions to make sure I understand the ordinal interval concept. Let me ask this question.

On your regret scale you used a few answers with the respondents. The answer being, I believe, "a great deal," "a lot" -- what were they?

A. "A great deal"; "quite a bit"; "somewhat."

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Q. "Quite a bit." Right. "Quite a bit"; "somewhat"; "a little"; and "not at all"?

A. Yes.

Q. And then what you did is you gave a score of one, two, three, four and five to those responses, right?

A. That's correct.

Q. Now, you could have, if you had wanted to, asked the respondents on a scale of one to five, how much do you regret having started to smoke? You could have done that?

A. Is that a question? Yes.

Q. Could you have done that?

A. Yes, I could have.

Q. And do social scientists sometimes do a question like that on a scale of one to ten, or a scale of one to five, give me an answer?

A. Yes, they do.

Q. And with respect to those answers and the textotomy we had called interval ordinal, what would you call that type of response?

A. The one to five.

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Q. The one to five, right.

A. Well, it's -- that's an interesting question.

Q. Thank you.

A. It turns out that there's a sizeable literature indicating that when you offer a scale of that sort, a one to five numbered scale to respondents -- and I assume, just to be clear here, you are putting on some verbal labels on the end to tell people what one and five mean.

Q. We will get to that because that's an interesting answer to an interesting question. But go ahead.

A. Well, if you're not going to specify whether you got labels on it, I would say it is no scale at all.

Q. Not a scale at all?

A. Yeah.

Q. Now let's put labels on it. What labels would you put on those?

A. Well, I have never seen a one to five scale offered to respondents in social science without verbally labeling at least the

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end points. So you know whether five means a lot of regret, no regret.

Q. Understood. So what you would say is on a scale of one to five, how much do you regret smoking, with one being the lowest and five being the highest?

A. Something of that sort. So you have to do that.

Q. Understood. Assuming you did that.

A. Now, it turns out that what the literature shows is that when you offer a scale like that with numbers on them, respondents need to try to decode what do those numbers mean in between those end points, what's the conceptual meaning of each of those points.

And so in order to use the numbered scale, they have to put some verbal meaning to each of them. And people do that process in a relatively unreliable and inconsistent way across people.

So putting verbal labels on all of the points establishes a more universally

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Krosnick

interpreted and reliable and accurate measure of whatever the construct is.

The point being that you would like to view the one, two, three, four, five perhaps as a -- let me rephrase that.

One might be increased to view the one, two, three, four, five scale as obviously on its face an interval level scale. Because the response options given to people are, in fact, equally numerically spaced.

But from the point of view of the measurement process, what you need to understand is how do people interpret those scale points, what meanings do they place on those scale points.

And despite the fact that you might wish for them to treat them as equally spaced, there is evidence that they don't do that and that you can improve the universally of interpretation by putting words on each of those points.

So to answer your question, I guess I have to answer it in two ways. On the one hand, on its surface would appear to be a

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set of response options with equal spacing. But in the minds of respondents, it's not at all clear that it will be interpreted that way with regard to the rating dimension of interest.

Q. Okay. Are you going to answer the question?

MR. BSCHORR: I think he just did.

Q. No. The question is: Would you call that an interval scale?

A. Well, I thought I just answered it.

But the question is then, are the -- what are the meanings of those response options, and can you talk about the conceptual spacing between them?

When we use a scale that has verbal labeling as I talk about, you can get some sense of what the interpretations are placed on them, so you are in a position to describe the intervals used.

And when you are using the numbers, it may well be the case that you can

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gauge what those intervals are as well, but not necessarily just simply from the fact that it is --

Q. I'm not asking you, Doctor, if you can gauge them. I'm asking you simply what you would call that scale.

You have written a textbook, have you not, in which you have discussed various calculations one can make with a ordinal scale and an interval scale and a ratio scale, correct?

A. I'm a coauthor of a textbook --

Q. Yes.

A. -- that talks about those issues, yes.

Q. Okay. And my question then is: What would you call the type of scale where you ask people to give a number on a one to five or one to ten basis, ten being the lowest -- zero being the -- ten being the highest, zero being the lowest?

A. Yeah.

Q. Is that an interval or ordinal scale?

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A. It is both ordinal and it has interval properties.

Q. It is ordinal and interval?

A. Yes.

Q. It is an ordinal scale with interval properties; was that your ordinal scale with interval properties; was that your answer?

A. That's right.

Q. What if you gave them the following choices, how much do you regret smoking on a one to five scale, one being a great deal, two being quite a bit, three being somewhat, four being a little, five being not at all? What would you call that type of response in your textotomy?

A. Where you are giving the numbers as well as the verbal?

Q. As well as the verbal labels.

A. I would say the same.

Q. So it would be an ordinal scale with interval properties?

A. Uh-huh.

Q. Okay. Now, what would you call

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the type of scale where you have no numbers, the person is not given a choice of numbers, only a set of verbal responses, "a great deal," "quite a bit," "somewhat," "a little" and "not at all"?

A. The same.

Q. The same. You would call it an ordinal scale?

A. What I said earlier it is both ordinal and interval.

Q. But you could call an ordinal scale with interval properties?

A. Yes.

Q. So in all three cases, one through five, a great deal through not at all and a great deal through not at all with the one through five attached with it, you would call an ordinal scale with interval properties?

A. Yes.

Q. Just so I understand it, it is therefore the interval properties that permit you to then go on and calculate an average, is that right, and to subject it to statistical significance testing?

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A. I'm hesitating on the word "permit." I'm not sure what you mean by "permit."

Q. What don't you understand about it?

A. I'm not sure what you mean by "permit." In other words, I can take any scale I want and conduct any analysis I would like with it.

Q. Within the bounds of scientific acceptability, correct?

A. That's a different matter.

Q. If you want to get a peer review by somebody such as myself?

A. Which is yet another matter.

Q. Right. Okay.

It is the numerical features of your ordinal scale with interval properties that permit you to do quantitative calculations?

A. I'm sorry, I would like to be helpful. I guess what I will say is I can agree with the assertion that each of those scales can be subjected to statistical

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analysis using statistics based on interval properties. But it is the "permit" that I'm having trouble with.

Q. Well, if you just had a set of responses of "a great deal," "quite a bit," "somewhat," "a little" and "not at all" --

A. Yes.

Q. -- you could not do any quantitative work unless you assigned numbers to those verbal responses?

A. That's correct.

Q. So without assigning numbers to an ordinal scale, you cannot do quantitative measurements, could you?

A. That's correct.

Q. That was my question.

A. Well, I'm sorry. It is not that you couldn't do it. Let's just be clear.

There are certain statistics that require numbers as inputs. And if there are no numbers, you can't, by definition, execute those statistics. There are other statistics that don't require numbers and you can execute them.

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Q. I will give you this one. This is your marked version of your expert report. Will you take a look at that, please?

A. Yeah.

Q. Could you turn to page 10 of the report?

A. Upper right is ten?

Q. Well, yes.

A. Table one?

Q. Table one.

A. Okay.

Q. Do you see that?

A. Uh-huh.

Q. Could you look at the variable cond4v1?

A. Yes.

Q. Is that how you refer to it? Yes.

What is that variable there? Do you see .21? Can you explain what that means?

A. Yes. That variable is what we call a dummy variable, simply meaning it is coded dichotomously; respondents can take a value of either zero or one on it.

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In this case, respondents who are in the SGTB condition of the experiment take a value of one, all other respondents take a value of zero.

Because that variable is analyzed in this regression, in this pair of regression in the last two columns where two other dummy variables are present, cond1v2 and cond1v3, this minus .21 coefficient that you asked about has --

Q. I'm sorry. You misunderstood. I'm asking you not about the minus .21, I'm asking you about the .21 in regression one.

A. I'm sorry. That would be cond4v1, not 1v4. That would be in the upper left-hand corner of the numbers in Column 1.

Sorry. Let's start this again.

Cond4v1 is also a dichotomously coded dummy variable coded "1," for people in the control condition, and "0" for respondents in the other three conditions.

Because the other two variables, condv2 and condv3, are present in the occasion, then the meaning of condv1 is to

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compare the adjusted means for two groups, the SGTB group and the control group, in terms of the dependent variable which is the motivation to quit index controlling for all of the demographic variables also included in the equation.

Q. Simply stated, it is the difference in the MTQ index between the control group and the SGTB group; is that right?

A. Yes.

Q. All right. Let's go on to the next variable, cond4v2.

A. Okay. I'll use your terminology. And that is the difference between the means motivation to quit and the SG group as compared to the SGTB group.

Q. And cond4v3, what is that?

A. That is the difference between the means motivation to quit and the TB group and the SGTB group.

Q. Let's look at the number .21.

A. Okay.

Q. What does that mean?

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A. It means that the difference in adjusted means between the control condition and the SGTB condition is .21 on the scale of motivation to quit index.

Q. And what does that mean? What is .21 units of MTQ mean?

A. I'm not sure what to say other than .21 units on the scale.

Q. What is a unit?

A. Well, the scale itself ranges from five to one, and one means the maximum motivation to quit, five means the minimum motivation to quit.

Q. And .21 is difference; is that right?

A. In means between those two conditions on that scale, right.

Q. And you've determined it's statistically significant, correct?

A. Yes, I have.

Q. Now, we had a discussion before about substantive significance, do you remember that?

A. Not really.

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Q. You wrote in your book that in addition to looking at statistical significance, you should also look at substantive significance to see if the differences really do matter. You don't remember that discussion?

A. You and I discussed that?

Q. Yes.

A. Not particularly.

Q. Well, you wrote in your book -- let me see if I can jog your memory here -- on page 280 of your text, "It is always important, however, to assess the substantive significance of a relationship between two variables." Does that sound familiar?

A. It may be. I haven't looked at the book in a while.

Q. "An association of .09 may be statistically significant but it is not of much use in predicting the dependent variable's value. Researchers should always try to judge the substantive significance of relationships in addition to their statistical significance." Okay? Sound familiar?

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A. I will -- I'll take your word for it that is in the book if that's what you're asking.

Q. Are you familiar with the concept of substantive significance?

A. Yes, I am.

Q. You were a couple of weeks ago.

A. Okay.

Q. As an expert in your field of psychology, did I get that right?

A. Yes.

Q. Can you tell us if the .21 difference is substantively significant?

A. Yes, it is.

Q. Now, let's assume that the value cond4v1 was not .21 but it was .20 and substantively -- excuse me, and statistically significant, okay?

A. Yes.

Q. Would you still say it was substantively significant?

A. Yes, I would.

Q. What about 1.9 -- excuse me, .19?

A. Yes, I would.

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Q. Down to .15?

A. Sure.

Q. All the way down to .05?

A. Yes.

Q. And all the way down to .01?

A. Yes.

Q. So basically what you are saying is that if it is statistically significant, you would also find it to be substantively significant?

A. In this particular context, yes, I would.

Q. Now, let's move on to, I think the question that you started to answer before when we had a little bit of confusion.

Condlv2?

A. Okay.

Q. Can you tell me what that number means?

A. In --

Q. What that predictor means? We're on to regression three now.

A. Okay. That predictor is comparing the means of motivation to quit index in the

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control condition versus the SG group. So that that is the difference between the means adjusted for the additional variables controlled in the equation.

Q. And can you tell me why you were running regression three? What is that to test?

A. That is to test the differences between the control condition and in the SG group and between the control condition in the TB group.

Q. And regression four?

A. Is for the same purpose.

Q. I was -- did you also run a regression to determine the statistical differences with respect to the number of times a particular respondent had heard a particular message? Did you control for that as well?

A. I'm not sure I understand.

Q. Could you look at Paragraph 3 of your report? I'm sorry. Paragraph 4.

"I also tested Defendants' hypothesis that hearing a greater number of

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statements about the health effects of smoking increases the saliency of the message." Do you see that?

A. Yes, I do.

Q. The paragraph statement is that you also tested to determine whether the number of messages might affect the respondent's answers?

A. That's correct.

Q. I thought it says here that you did those, that you reported your results in the final two columns of table one?

A. That's correct.

Q. That's what I thought you said.

So in regression three and regression four, you were testing, as I understand it, to see if there is a difference in terms of the number of messages heard by the respondents?

A. The number of messages the respondents are exposed to, yes.

Q. Isn't that what I asked you before?

A. Maybe so.

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Q. And the answers there look to be -- excuse me.

The regression values in regressions three and regressions four look to be similar to the values generated in regression one and regression two; do you see that?

A. I don't understand what you mean by -- similar to what?

Q. Well, you have compared in regression one, for example, we started with cond4vf, correct?

A. Yes.

Q. And you got a response of .21 units?

A. Coefficient of .21, yes.

Q. The coefficient was .21.

And we also see a negative .21 units also significant -- in fact, yes, also significant in regression three; do you see that?

A. That's correct.

Q. Is one the inverse of the other?

A. Yes, it is.

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Q. So basically, the test in regression one and two are running the same regression as three and four?

A. They're not the same, but they are comparing the same means, yes.

Q. And that is because the type of, the qualitative messages in the MTQ index are the same as the quantitative, the number of messages in the MTQ index as well?

A. That I don't understand.

Q. Can you separate out the types of messages heard by SGTB, etcetera, from the number of times those messages were heard?

A. I'm sorry. I'm still not following it.

Q. Can I speak to the crude analyst next to me for a second? Maybe he can rephrase the question.

How do you go about analyzing the group that got six messages?

A. Sorry. That didn't help either. How do I analyze the group that got six?

Q. You will get this one.

A. Good. Looking forward to it.

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Q. With respect to the group that got six messages, can you tell me that they are different because they got six messages or because they were the group exposed to SGTB?

A. Different from whom?

Q. Different from somebody that may have gotten three messages.

A. Yes. That's the purpose of this analysis. Would you like me to explain the purpose of this analysis?

Q. Yes. Go ahead.

A. The alternative hypothesis that I was testing here is the idea that the SGTB group expressed greater motivation to quit simply because they heard six messages, instead of the fact that there were six messages from two different sources, one of whom had interests such that offering these messages conflicts with their self interests.

Q. Everybody in the SGTB group got six messages, correct?

A. Correct.

Q. How many messages did people in the SG group get?

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A. Three.
Q. And in the TB group?
A. Three.
Q. And in the control?
A. Zero.
Q. So you couldn't test because you don't have the data to see what would have been the effect if there were six messages just from the tobacco companies, because you don't have the data for that?
A. I performed a test here which I think is informative with regard to drawing a conclusion on that point which I'm happy to explain if you would like me to.
Q. Why don't you first answer my question and then you can explain?
A. I believe I do have data with relevance to the issues that you're raising.
Q. Well you could not test, could you, Dr. Krosnick, to see the effects if the respondents had been exposed to six tobacco company messages?
A. If what you're saying is, Was there a condition in this experiment in which

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respondents heard six messages? Certainly the answer to that is no.

Q. Same with six on the Surgeon General messages?

A. That's correct.

Q. You don't have the data there?

A. I don't have those conditions in the experiment. But I have data informative on the issue you're raising.

Q. And the data on the issue I'm raising is reflected in regressions three and four?

A. That's correct.

Q. Now go ahead and explain.

A. Okay. If it were the case that merely hearing messages on this topic, no matter who they come from, increases the salience of the health effects of smoking, as Professor Mathiowetz offered in her written report, then we would expect to see, in fact, the largest gap between the groups that heard three quotes each versus the control group that heard none.

Because there is evidence in the

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literature of what's called decreasing marginal returns from this sort of exposure. So each additional exposure to something is less impactful than the prior ones. And the most impactful one is the first exposure.

Therefore, if one wanted to test the simple hypothesis that simply hearing quotes, no matter from whom, causing changes in motivation to quit, we would do exactly what was done here in the control group, the SG group and the TB group.

And what we found was no statistically significant differences between those groups. That means to me that mere volume of messages is unlikely to produce this change, particularly if the messages are ones that people have been exposed to in isolation over a relatively wrong period of time.

What's novel about the SGTB condition is the essentially contiguous presentation of the messages from two different sources.

Q. Thanks. Are you done?

A. I'm done.

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Q. All right. I want to return to the concept of substantive significance.

A. Okay.

Q. Now, you draw the conclusion that because your regression value -- your coefficient, excuse me, is .21, that people in the SGTB group were significantly more likely to, excuse me, were more likely to stop smoking? Go ahead.

A. People in the SGTB group had a higher score in the motivation to quit index.

Q. Right. Which was significant, statistically significant?

A. As compared, yes, with particular groups.

Q. And so you believe that someone with a higher score, a statistically significant higher score on the MTQ index would be more likely to quit smoking cigarettes?

A. Yes.

Q. If the coefficient was not statistically significant, you could not make that statement, could you?

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A. I would not make that statement.

Q. You would not make that statement?

A. (Witness nodding.)

Q. Now, let me ask this question with respect to substantive significance.

Let's look at an individual person, two individual persons on the MTQ index.

A. Okay.

Q. One gave answers pursuant to which you were able to quantify at four, four, four and four, and another gave answer which you were able to quantify on your interval scale as four, four, four and five.

Okay? So one would have an MTQ, I believe, of 4.0, whereas the other fellow would have an MTQ of 4.25?

A. Sounds close enough.

Q. Are my numbers correct?

A. Sounds about right.

Q. Could you say that the individual who had the number, the MTQ, motivation to quit index of 4.25 was substantially more likely to quit smoking than the fellow who had

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4.0? Excuse me. I flipped them.

Could you say the one who had 4.0 was substantially more likely to quit smoking than the fellow who had 4.25?

A. Okay. I have to answer that in two ways.

The first is "substantially" doesn't have a technical meaning in my literature.

Q. Okay. Thought significantly?

A. Good. You can't make a statement about two particular cases being compared in terms of statistical significance.

Q. How about as a social psychologist? Could you, if somebody came to you and you looked at those 4.25 and 4.0, could you say that one was significantly more likely to quit than the other?

A. I could not make a statement about the significance of that difference between those two people.

Q. I'm going to move on to something easier, is that all right?

A. Sure.

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Q. You have listed this book on your reliance list. Okay? And I for the life of me can't figure out why. Could you share that with us. It is a book by Mike A. Males called "Smoked: Why Joe camel is still smiling." You read it, I take it?

A. I skimmed it.

Q. Can you tell us for what portion of your opinion you are relying upon this particular book?

A. None.

Q. None? Can you tell us why Mr. Hefter put it on your reliance list?

A. Yes. I was asked to -- should I finish?

Q. I'm sorry to laugh. It is Friday afternoon.

A. I'm enjoying it myself.

I was as -- I have described previously, I gathered a series of books in a relatively arbitrary computer search to get background on the history of tobacco history. This is one of the books that showed up in that search, and I skimmed those books quickly

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to look for relative information of any value in this case.

I was asked by the attorneys, after having mentioned that in a deposition, to list all of the books in that group that I could. I had already returned all of them to the library and I was able to identify a couple of them, which that was one of them. So it is listed not by any decision I made.

Q. You do not intend to discuss that in your testimony?

A. No, I don't.

Q. Now, in this third report -- oh, you have a new reliance list, I didn't realize that. You have been doing some more reading?

A. Not necessarily. I'm not aware of when that may have been provided to you all.

Q. In your supplemental report there which you have in front of you, some of your analysis depends on current or former smoking status of the respondents; is that correct?

A. Yes.

Q. If in your analysis current and former smokers were not defined correctly or

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accurately, would that affect your results?

A. Let me clarify what you mean be if they were not --

Q. For example, if you had some people who were former smokers or current smokers but you had miscategorized them as current and former smokers, that would affect your results, would it not?

A. Yes.

Q. Have you done any tests to see whether you have properly classified respondents as current or former smokers?

A. I took at face value respondents' answers to two questions in the SRBI survey. I assume that's what we are referring to?

Q. In the SRBI, yes, that's right.

A. I took at face value respondents' answers to two questions nearing the beginning of the interview that asked about recent smoking and long-term smoking behavior.

Q. Right.

A. You're asking if I did anything to check whether those answers were correct?

Q. Yes. Or to see whether somebody

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slipped through your screen as a current smoker being classified as a former, or former as a current. Did you have any additional check on that?

A. To see whether those answers to those early questions were accurate?

Q. Correct. Or that you had properly classified them as current or former.

MR. BSCHORR: I'm going to object to that. He didn't classify them.

A. That's where I got thrown off, too.

MR. WILLIAMS: Oh, who classified them?

MR. BSCHORR: Ask him.

Q. Who classified them?

A. It depends what you mean by "classified them." In other words, we asked these two questions about five cigarettes recently and 100 cigarettes over a lifetime. And on the basis of those answers, SRBI decided either to proceed with the interview or not because they had some criteria for proceeding.

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And so they made a decision about whether individuals should or should not continue with the interview based on those answers.

Q. And who -- I'm sorry. Go ahead.

A. No. No.

Q. And who developed those criteria, five cigarettes?

A. They were given to me by attorneys at Dewey Ballantine as standard practice in this literature.

Q. I see. What was standard practice, the classification of current and former smokers?

A. Yes. Defining "current" and "former" smokers.

Q. And tell me how "current" and "former" smokers were defined in your study?

A. My recollection was, I may get the number slightly off, that a current smoker was somebody who had smoked at least five cigarettes in the last seven days; and that a former smoker is somebody who had not smoked at least five cigarettes in the last seven

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days, but had smoked at least 100 cigarettes during their lifetime.

Q. And those were the conventions given you by lawyers at Dewey Ballantine?

A. Yes.

Q. And have you ever seen those criteria in any of the other literature?

A. Any other literature or use of --

Q. Any other literature.

A. Okay. I haven't particularly looked for criteria one way or the other in another literature.

Q. Do you know, for example, how the Surgeon General defines "current" and "former" smokers?

A. No.

Q. Do you know how any, for example, the Institute of Medicine defines "current" and "former" smokers?

A. No.

Q. You just took that on face value, that that was a proper definition of "current" and "former" smokers; is that right?

A. It was a reasonable definition,

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yes.

MR. WILLIAMS: Let's go off the record for a minute. Take about two minutes. Is that all right?

MR. BSCHORR: Sure.

THE VIDEOGRAPHER: The time is 5:36 p.m. and we're going off the record.

(Whereupon, a short recess was taken.)

THE VIDEOGRAPHER: The time is 5:42 p.m. We're back on the record.

BY MR. WILLIAMS:

Q. Okay. Going back to your definition of "current" and "former" smokers.

If somebody was contacted and smoked five or more in the last seven days, he would be a current smoker; is that right?

A. If I remember correctly with the number.

Q. But if he was four or more in the last seven days, four or fewer, excuse me, four or fewer in the last seven days, he could slip down to the former smoker?

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A. That's correct.

Q. And you were given those conventions by the Dewey Ballantine lawyers?

A. That's correct.

Q. Who in particular?

A. I don't remember.

Q. Somebody?

A. Yes.

Q. No recollection of who?

A. That's correct.

Q. Did you do any literature search to see if those definitions were in the literature?

A. No.

Q. Are you aware that there are definitions of "current" and "former" smokers in the literature?

A. I'm aware that anytime anybody analyzes data, that they have to make a decision like I did about how to classify people.

Q. And you don't know anybody who has classified them as you have?

A. I don't know one way or another.

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Q. You didn't --
A. I haven't --
Q. You did not check?
A. That's correct.
Q. Are you familiar with the Tab Surveys, "Teenage Attitudes and Preference"?
A. Not by that name. But if you told me more information, I might.
Q. Tabs one, tabs two? You're not --
A. Numbers don't help.
Q. How about the "Monitoring the Future"?
A. Yes, I'm familiar with that.
Q. Did you check to see how "current" and "former" smokers were defined in there?
A. I'm not sure they're defined in there.
Q. How about the SUMHAS literature?
A. I'm sorry.
Q. S-U-M-H-A-S.
A. Would you mind telling me what that initials stand for? It might help.
Q. Is it Substantive Use Mental Health Administration Survey?

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A. No, I don't know about their procedures.

Q. You never heard of that survey?

A. That's correct.

Q. You never heard of SUMHAS?

A. That's correct.

Q. How about CDC?

A. I have heard about the CDC, yes.

Q. Have you determined how they define "current" and "former" smokers?

A. No, I have not.

Q. How about NHIS, National Health Interview Survey?

A. I know what those surveys are.

Q. Did you do any search to see how they define "current" and "former" smokers?

A. No, I have not.

MR. WILLIAMS: I got nothing further.

MR. BSCHORR: Thank you. I got just one or two questions.

MR. WILLIAMS: I hope it refers to my cross and not to somebody else's earlier.

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EXAMINATION BY

MR. BSCHORR:

Q. Professor Krosnick, in putting in your Supplemental Disclosure Report, the third report, you set forth various tests and analyses that you did; is that correct?

A. Yes.

Q. Do any of those analyses that you did change any of the basic opinions you've expressed in this case?

A. No, they do not.

Q. Indeed, do any of the analyses that you gave reconfirm and strengthen that of the opinions you have given before?

A. Yes, they do.

Q. So bottom line, the opinions you have given in this case remain the same throughout?

MR. WILLIAMS: I'll object --

A. Yes, they do.

MR. WILLIAMS: -- to form and leading. That's okay. We will see you on Monday.

THE VIDEOGRAPHER: The time is

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5:46 p.m., April 20, 20001. This is the end of tape number two of the videotaped -- completes the videotaped deposition of Jon A. Krosnick. We are going off the record.

(Time noted: 5:46 p.m.)

JON A. KROSNICK

Subscribed and sworn to before me this ____ day of _____, 2000.

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C E R T I F I C A T E

STATE OF NEW YORK)
: ss.
COUNTY OF NEW YORK)

I, MAYLEEN CINTRON, a Shorthand Reporter and Notary Public within and for the State of New York, do hereby certify:

That JON A. KROSNICK, the witness whose deposition is hereinbefore set forth, was duly sworn by me and that such deposition is a true record of the testimony given by the witness.

I further certify that I am not related to any of the parties to this action by blood or by marriage, and that I am in no way interested in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 20th day of April, 2000.

MAYLEEN CINTRON

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SUPPLEMENTAL DISCLOSURE OF DR. JON KROSNICK

1. In January and February, 2001, I submitted expert reports in this action setting forth my opinions regarding the impact of the conduct of the defendants on the knowledge and smoking behavior of Americans, and, in particular, subscribers of Blue Cross and/or Blue Shield plans.[1] As a result of questioning at my deposition on March 12, 2001, as well as reports recently submitted by defendants' experts Nancy A. Mathiowetz, Donald B. Rubin, W. Kip Viscusi and William E. Wecker, I went back and reviewed my original opinions. My review confirmed that certain assertions made by defendants are contradicted by the data and analyses. My review also reconfirmed my opinions as contained in my original expert and supplemental reports. The results of my review are as follows:

Multivariate Analyses of the SRBI Survey Experiment

2. The statistical analyses I described in my January report test differences between the four experimental groups of respondents in terms of motivation to quit using a one-way analysis of variance. I then conducted another analysis comparing the four groups in terms of their scores on the motivation to quit scale, this time controlling for the following variables: gender, race, education, age, region of residence, number of telephone lines in the household, number of adults living in the household, income, status as a current or former smoker, whether the respondents was ever a Blue Cross/Blue Shield subscriber. The results of this analysis are contained in the first two columns of Table 1.

---

[1] My qualifications are set forth in the January report, which I incorporate herein by reference.

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3 My interpretation of these results is consistent with my earlier conclusions that hearing statements about the health effects of smoking from both the Surgeon General and tobacco companies simultaneously significantly increased motivation to quit because people found it especially persuasive to hear these messages from two different sources, especially when making these statements was against the material interests of one of the sources

4. I also tested defendants' hypothesis that hearing a greater number of statements about the health effects of smoking increases the saliency of that message, and whether it may simply have been this increase, rather than the particular sources providing the statements, that produced the observed differences in motivation to quit between the SGTB group and the control and SG groups. The results of this multiple regression analysis are shown in the last two columns of Table 1.

5 Based on this analysis, I found non-significant differences between the control group and the SG group and the TB group. This analysis indicates that mere volume of quotes heard does not increase motivation to quit and instead supports my initial assertion that hearing quotes by tobacco companies would have been especially potent if made at the same time that the Surgeon General was making comparable statements to the American public in the 1960s through the same media.

6 In response to an issue raised by defendants' expert Mathiowetz in her report, I tested whether the impact of the experimental manipulations varied significantly between people who were current smokers and people who were former smokers. To do so, I added three interaction terms to the regression equations shown in Table 1 (interacting the three variables representing the experimental conditions with a variable differentiating current and former smokers). When added to the regression equations,

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none of these interactions ever had significant effects, meaning that I cannot reject the null hypothesis that the experiment's effects were different in the two groups.

7 I also tested the extent to which the four measures of motivation to quit in the SRBI questionnaire (how much respondents regret smoking, how unhappy it makes them that they smoke, how much they would like to quit smoking, and how likely they are to try to quit) measured a single underlying construct. Cronbach's alpha, a statistic that ranges from 0 to 1, was .78 for current smokers, a figure that indicates sufficient covariation among the items to justify treating them as indicators of the concept of motivation to quit (Cronbach 1951). The correlation between the first two measures was very similar among current and former smokers (.55 and .47), indicating that the factor structure of these items does not differ among former smokers.

Recoding the Constituents of the Motivation to Quit Index

8 In response to questioning at my deposition, I indicated that a large body of studies have asked people to describe in quantitative terms the meanings of phrases like those offered as response options in the constituents of the SRBI survey's measures of motivation to quit (for a review of this literature, see Krosnick & Fabrigar, forthcoming, Chapter 6). This research supports two principal conclusions: (1) people's average perceptions of the meanings of these sorts of terms have been remarkably consistent over the last five decades and across many different respondents populations, and (2) the amount of disagreement between people in terms of their interpretations of the meanings is relatively small. These studies suggest that the perceived spacing of the response options offered in the SRBI survey may have departed from equality to small degrees

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9 In order to confirm my initial results using these alternative spacings, I rescaled the coding numbers for the response options in the SRBI surveys measures of motivation to quit to reflect the perceived spacings suggested by these past studies. Using these figures, I recomputed an index of motivation to quit and reestimated the regressions shown in Table 1 testing the differences between the four experimental conditions in terms of this new index. The results, shown in Table 2, illustrate that using this analytic procedure that permits unequal spacing of the response options does not alter the conclusions of the analysis at all.

Relative Risk vs. Absolute Risk and the Risk Differential

10. The SRBI data allowed me to test whether perceptions of relative risk perceptions, smokers' absolute risk, or the risk differential inspire quitting smoking. To make this assessment, I transformed each of the three predictors into 6-level variables, with approximately one-sixth of the cases in the sample at each level. This transformation yielded comparable distributions for all three variables, to place them on a "level playing field," so to speak.

11. Next, I computed the percentage of people at each level of each variable who had quit smoking. The proportions of quitters in each of the six groups defined by relative risk are 39%, 38%, 48%, 58%, 57%, 60%, respectively, moving from lowest perceived risk to highest perceived risk. The linear trend in these numbers was statistically significant ($F(1, 1896) = 56.37$, $p<.001$). The proportions of quitters in the six groups defined by the risk differential did not increase as consistently: 39%, 55%, 49%, 47%, 56%, 55% respectively. The linear trend in these numbers was also statistically significant ($F(1, 1895) = 15.60$, $p<.001$) but was notably weaker than the

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linear trend yielded by relative risk. And the proportions of quitters in the six groups defined by absolute risk showed no linear trend at all: 49%, 56%, 52%, 45%, 52%, 49% ($F(1, 1930) = 1.05$, n.s.). Thus, relative risk appears to be the risk measure most consistently associated with quitting behavior.

12. I conducted two logistic regressions predicting a dichotomous variable representing smoking status (coded 0 for former smokers and 1 for current smokers) using perceived relative risk, perceived absolute risk, the perceived risk differential (each coded from 1 to 6 representing increasing perceived risk), and the demographic control variables. The results are shown in Table 3. I did two analyses, one not controlling for income (to maximize sample size) and another controlling for income. As shown by the coefficients at the tops of the two columns, the effect of perceived relative risk is negative and statistically significant in both analyses, suggesting that increased perceived relative risk enhances likelihood of quitting smoking. In contrast, the effects of absolute risk and the perceived risk differential are both non-significant, suggesting that they do not drive decisions to quit smoking. These analyses reinforce my opinion that perceived relative risk is a determinant of whether or not people smoke.

Wording of Survey Questions Used to Measure Perceptions of Risk

13. Lastly, to further test and affirm my design of the relative risk questions contained in the SRBI survey, I compared the SRBI questions about 1,000 smokers and non-smokers to the Audits & Surveys question about 100 smokers in terms of their ability to predict smoking cessation. To make this comparison appropriate, the Audits & Surveys measure of the perceived risk differential must be compared to the calculation of perceived risk differential from the SRBI survey. Using the data from each survey, I

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used these measures to predict smoking status, coded 0 for former smokers who had quit smoking by the time of the interview and 1 for people currently smoking at the time of the interview.

14 To assess the relation, I conducted logistic regressions predicting quitting with the perceived risk differential (I divided perceived risk differential by 100 to make the resulting regression coefficients larger and easier to compare). The regression coefficient describing the effect of perceived risk differential on smoking status in the 1985 Audits & Surveys survey data is -.035, p=.015 (N=1752). In the 1997 Audits & Surveys survey data, which had a considerably smaller number of current and former smokers, the regression coefficient was a bit larger, -.047, but was non-significant (p=.89, N=516). In contrast, the regression coefficient estimating this same relation in the SRBI survey data is -.062, p<.001 (N=1898). The observed coefficient is 77% larger in the SRBI data than in the 1985 Audits & Surveys data and 32% larger than in the 1997 Audits & Surveys data. This comparison suggests that the SRBI measure of risk differential contains less error, which indicates that using of the based of 1,000 people did not compromise measurement quality.

Jon A. Krosnick
April 3, 2001

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Table 1

Ordinary Least Squares Regressions Predicting Motivation to Quit

	Unstandardized Regression Coefficients			
Predictor	Regression 1	Regression 2	Regression 3	Regression 4
Cond4v1	.2 *	.19*		
Cond4v2	.19*	.21*		
Cond4v3	.13	.12		
Cond1v2			-.02	-.03
Cond1v3			-.08	-.08
Cond1v4			-.21**	-.19*
Gender	-.25**	-.20**	-.25**	-.20**
Race:Black	-.33**	-.42**	-.32**	-.42**
Race: Asian	-.46	-.54	-.46	-.54
Race: Hispanic	.03	.05	.03	.05
Race: Other	.04	.09	-.04	-.09
Education: Less than high school	-.28**	-.24*	-.29**	-.24*
Education: High school graduate	-.08	-.09	-.07	-.09
Education: Some college	-.10	-.06	-.10	-.06
Education: Associates Degree	-.20	-.19	-.21	-.19
Education: Bachelor's Degree	.29*	.25	.29*	.25
Telephone lines: One	-.17	-.34	-.17	-.34
Telephone lines: Two	-.17	-.35	-.18	-.35
Telephone lines: Three	-.04	-.20	-.04	-.20
Region: Northeast	-.11	-.16	-.17	-.16
Region: Midwest	-.03	-.09	-.03	-.09
Region: South	-.07	-.09	-.07	-.09
Age: 25 or younger	-.24*	-.42**	-.24	-.42**
Age 26-35	-.19	-.20	-.19	-.20
Age: 36-45	-.32**	-.42**	-.33**	-.42**
Age: 46-55	-.28**	-.36**	-.28**	-.36**
Age: 56-65	-.40**	-.45**	-.40**	-.45**
Number of adults: One	.04	.07	.04	.07
Number of adults: Two	-.05	-.11	-.05	-.11
Number of adults: Three	-.16	-.19	-.16	-.19
Current vs. Former Smoker	-.32**	-.32**	-.32**	-.32**
Blue Cross/Blue Shield Subscriber	-.07	-.07	-.07	-.07
Income: < $10,000		-.06		-.07
Income: $10,001-$20,000		.18		.18
Income: $21,000-$30,000		.09		.09
Income: $31,000-$40,000		.18		.18
Income: $41,000-$50,000		.13		.13
Income: $51,000-$60,000		.02		.02
Income: $61,000-$75,000		.01		.01
Income: $76,000-$100,000		.03		.03
Income: $101,000-$150,000		.18		.18
N	1908	1560	1908	1560

*p< .05 **p< .01

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Table 2

Ordinary Least Squares Regressions Predicting Motivation to Quit (Unequal Spacing of Rating Scale Points)

	Unstandardized Regression Coefficients			
Predictor	Regression 1	Regression 2	Regression 3	Regression 4
Cond4v1	.22*	.20*		
Cond4v2	.19*	.21*		
Cond4v3	.13	.11		
Cond1v2			-.02	.02
Cond1v3			-.09	-.09
Cond1v4			-.22*	-.20*
Gender	-.25**	-.20**	-.25**	-.20**
Race: Black	-.35**	-.44**	-.35**	-.44**
Race: Asian	-.52*	-.57	-.52*	-.57*
Race: Hispanic	.01	-.08	.01	.01
Race: Other	-.02	.01	-.02	-.08
Education: Less than high school	-.31**	-.28*	-.31**	-.28*
Education: High school graduate	-.10	-.13	-.10	-.13
Education: Some college	-.12	-.09	-.12	-.09
Education: Associate's degree	-.22	-.22	-.22	-.22
Education: Bachelor's degree	.27*	.23	.27*	.23
Telephone lines: One	-.14	-.32	-.14	-.32
Telephone lines: Two	-.13	-.31	-.13	-.31
Telephone lines: Three	-.02	-.15	-.02	-.15
Region: Northeast	-.09	-.15	-.09	-.15
Region: Midwest	-.01	-.07	-.01	-.07
Region: South	-.07	-.10	-.07	-.10
Age: 25 or younger	-.17	-.34**	-.17	-.34*
Age: 26-35	-.14	-.14	-.14	-.14
Age: 36-45	-.28**	-.37**	-.28**	-.37**
Age: 46-55	-.25*	-.32**	-.25*	-.32**
Age: 56-65	-.39**	-.44**	-.39**	-.44**
Number of adults: One	.05	.07	.05	.07
Number of adults: Two	-.03	-.10	-.03	-.10
Number of adults: Three	-.17	-.19	-.17	-.19
Current vs. Former Smoker	-.36**	-.36**	-.36**	-.36**
Blue Cross/Blue Shield Subscriber	-.08	-.08	-.08	-.08
Income: < $10,000		-.06		-.06
Income: $10,001-$20,000		-.17		-.17
Income: $21,000-$30,000		-.10		-.10
Income: $31,000-$40,000		-.16		-.16
Income: $41,000-$50,000		.14		.14
Income: $51,000-$60,000		.03		.03
Income: $61,000-$75,000		.02		.02
Income: $76,000-$100,000		-.04		-.04
Income: $101,000-$150,000		.16		.16
N	1906	1560	1906	1560

*p< .05 **p< .01

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Table 3.

Logistic Regressions Predicting Smoking Status (Former vs. Current)

Predictor	Regression 1	Regression 2
Perceived relative risk	-.20**	-.22**
Perceived absolute risk	.00	-.02
Perceived risk differential	-.07	-.05
Gender	.27*	.38**
Race: Black	.07	-.02
Race: Asian	.42	.40
Race: Hispanic	-.38	-.47*
Race: Other	-.18	-.15
Education: Less than high school	.41*	.40
Education: High school graduate	.53**	.47*
Education: Some college	.12	.01
Education: Associates Degree	.43	.40
Education: Bachelor's Degree	-.30	-.13
Telephone lines: One	-.22	.12
Telephone lines: Two	-.36	.07
Telephone lines: Three	-.36	.32
Region: Northeast	.07	.10
Region: Midwest	.31	.35
Region: South	.27	.26
Age: 25 or younger	2.66**	2.67**
Age: 26-35	2.37**	2.43**
Age: 36-45	1.73**	1.81**
Age: 46-55	1.26**	1.37**
Age: 56-65	.75**	.87**
Number of adults: One	.07	.06
Number of adults: Two	-.08	.08
Number of adults: Three	.31	.49
Blue Cross/Blue Shield subscriber	-.27*	-.25*
Income: < $10,000		.89*
Income: $10,001-$20,000		.61
Income: $21,000-$30,000		.53
Income: $31,000-$40,000		.49
Income: $41,000-$50,000		.60
Income: $51,000-$60,000		.30
Income: $61,000-$75,000		.46
Income: $76,000-$100,000		.24
Income: $101,000-$150,000		-.21
N	1833	1521

*p< .05 **p< .01

Produced by R.J.R.T.C. in Richmond

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Professor Jon A. Krosnick
Supplemental Reliance List
April 4, 2001

Materials produced on March 12, 2001.

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```
GET
  FILE='D:\2000 Smoking Study\2000 Smoking Study Dataset - New Vars.sav'.
GET
  FILE='D:\2000 Smoking Study\viscusi 1985\Viscusi 1985 Survey Data.sav'.
COMPUTE q3 = q3/100 .
EXECUTE .
LOGISTIC REGRESSION VAR=q4
  /METHOD=ENTER q3
  /CRITERIA PIN(.05) POUT(.10) ITERATE(20) CUT(.5) .
```

Logistic Regression

Notes

Output Created		28-MAR-2001 07:51:32
Comments		
Input	Data	D:\2000 Smoking Study\viscusi 1985\Viscusi 1985 Survey Data.sav
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	3500
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
Syntax		LOGISTIC REGRESSION VAR=q4 /METHOD=ENTER q3 /CRITERIA PIN(.05) POUT(.10) ITERATE(20) CUT(.5) .
Resources	Elapsed Time	0:00:01.70

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	1752	50.1
	Missing Cases	1748	49.9
	Total	3500	100.0
Unselected Cases		0	.0
Total		3500	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
1	0
2	1

Block 0: Beginning Block

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Classification Table[a,b]

			Predicted		
			Q4		Percentage Correct
	Observed		1	2	
Step 0	Q4	1	892	0	100.0
		2	860	0	.0
	Overall Percentage				50.9

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.037	.048	.584	1	.445	.964

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Q3	5.916	1	.015
	Overall Statistics		5.916	1	.015

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	5.943	1	.015
	Block	5.943	1	.015
	Model	5.943	1	.015

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	2422.260	.003	.005

Classification Table[a]

			Predicted		
			Q4		Percentage Correct
	Observed		1	2	
Step 1	Q4	1	245	647	27.5
		2	238	622	72.3
	Overall Percentage				49.5

a. The cut value is .500

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Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Q3	-.035	.015	5.879	1	.015	.965
	Constant	.024	.054	.195	1	.659	1.024

a. Variable(s) entered on step 1: Q3.

```
GET
  FILE='D:\2000 Smoking Study\VIscusi 1997\Viscusi 1997 Smoking Dataset.sav'.
COMPUTE lungc = lungc/100 .
VARIABLE LABELS lungc 'COMPUTE  lungc = lungc/100 (COMPUTE)' .
EXECUTE .
FREQUENCIES
  VARIABLES=smoker
  /ORDER=  ANALYSIS .
```

Frequencies

Notes

Output Created		28-MAR-2001 07:53:41
Comments		
Input	Data	D:\2000 Smoking Study\VIscusi 1997\Viscusi 1997 Smoking Dataset.sav
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	1013
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=smoker /ORDER= ANALYSIS .
Resources	Total Values Allowed	18724
	Elapsed Time	0:00:00.22

Statistics

SMOKER

N	Valid	1011
	Missing	2

SMOKER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	245	24.2	24.2	24.2
	2	271	26.8	26.8	51.0
	3	495	48.9	49.0	100.0
	Total	1011	99.8	100.0	
Missing	System	2	.2		
Total		1013	100.0		

```
LOGISTIC REGRESSION VAR=smoker
  /METHOD=ENTER lungcest
```

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/CRITERIA PIN(.05) POUT(.10) ITERATE(20) CUT(.5) .

Logistic Regression

Notes

Output Created		28-MAR-2001 07:54:53
Comments		
Input	Data	D:\2000 Smoking Study\Vlscusi 1997\Viscusi 1997 Smoking Dataset.sav
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	1013
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
Syntax		LOGISTIC REGRESSION VAR=smoker /METHOD=ENTER lungcest /CRITERIA PIN(.05) POUT(.10) ITERATE(20) CUT(.5) .
Resources	Elapsed Time	0:00:00.99

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	516	50.9
	Missing Cases	497	49.1
	Total	1013	100.0
Unselected Cases		0	.0
Total		1013	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
1	0
2	1

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			SMOKER		Percentage Correct
	Observed		1	2	
Step 0	SMOKER	1	0	245	.0
		2	0	271	100.0
	Overall Percentage				52.5

a. Constant is included in the model.

b. The cut value is .500

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Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.101	.088	1.309	1	.253	1.106

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	LUNGCEST	.018	1	.894
	Overall Statistics		.018	1	.894

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	.018	1	.894
	Block	.018	1	.894
	Model	.018	1	.894

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	713.999	.000	.000

Classification Table[a]

			Predicted		
			SMOKER		Percentage Correct
	Observed		1	2	
Step 1	SMOKER	1	0	245	.0
		2	0	271	100.0
	Overall Percentage				52.5

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	LUNGCEST	-.047	.350	.018	1	.894	.954
	Constant	.104	.091	1.298	1	.255	1.110

a. Variable(s) entered on step 1: LUNGCEST.

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Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Q3	-.035	.015	5.879	1	.015	.965
	Constant	.024	.054	.195	1	.659	1.024

a. Variable(s) entered on step 1: Q3.

```
GET
  FILE='D:\2000 Smoking Study\VIscusi 1997\Viscusi 1997 Smoking Dataset.sav'.
COMPUTE lungc = lungc/100 .
VARIABLE LABELS lungc 'COMPUTE  lungc = lungc/100 (COMPUTE)' .
EXECUTE .
FREQUENCIES
  VARIABLES=smoker
  /ORDER=  ANALYSIS .
```

Frequencies

Notes

Output Created		28-MAR-2001 07:53:41
Comments		
Input	Data	D:\2000 Smoking Study\VIscusi 1997\Viscusi 1997 Smoking Dataset.sav
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	1013
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=smoker /ORDER= ANALYSIS .
Resources	Total Values Allowed	18724
	Elapsed Time	0:00:00.22

Statistics

SMOKER

N	Valid	1011
	Missing	2

SMOKER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	245	24.2	24.2	24.2
	2	271	26.8	26.8	51.0
	3	495	48.9	49.0	100.0
	Total	1011	99.8	100.0	
Missing	System	2	.2		
Total		1013	100.0		

```
LOGISTIC REGRESSION VAR=smoker
  /METHOD=ENTER lungcest
```

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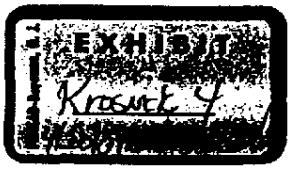

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```
/CRITERIA PIN(.05) POUT(.10) ITERATE(20) CUT(.5) .
```

Logistic Regression

Notes

Output Created		28-MAR-2001 07:54:53
Comments		
Input	Data	D:\2000 Smoking Study\Viscusi 1997\Viscusi 1997 Smoking Dataset.sav
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	1013
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
Syntax		LOGISTIC REGRESSION VAR=smoker /METHOD=ENTER lungcest /CRITERIA PIN(.05) POUT(.10) ITERATE(20) CUT(.5) .
Resources	Elapsed Time	0:00:00.99

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	516	50.9
	Missing Cases	497	49.1
	Total	1013	100.0
Unselected Cases		0	.0
Total		1013	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
1	0
2	1

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			SMOKER		Percentage Correct
	Observed		1	2	
Step 0	SMOKER	1	0	245	.0
		2	0	271	100.0
	Overall Percentage				52.5

a. Constant is included in the model.

b. The cut value is .500

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Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.101	.088	1.309	1	.253	1.106

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	LUNGCEST	.018	1	.894
	Overall Statistics		.018	1	.894

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	.018	1	.894
	Block	.018	1	.894
	Model	.018	1	.894

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	713.999	.000	.000

Classification Table[a]

			Predicted		
			SMOKER		Percentage Correct
	Observed		1	2	
Step 1	SMOKER	1	0	245	.0
		2	0	271	100.0
	Overall Percentage				52.5

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	LUNGCEST	-.047	.350	.018	1	.894	.954
	Constant	.104	.091	1.298	1	.255	1.110

a. Variable(s) entered on step 1: LUNGCEST.

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